# THE QUARTERLY JOURNAL OF FOREIGN MEDICINE AND SURGERY;

AND OF THE

*SCIENCES CONNECTED WITH THEM.*

VOLUME I.

NOVEMBER, FEBRUARY, MAY, AUGUST,

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Tros Tyriusve mihi nullo discrimine agetur. VIRGIL.

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# Prospectus.

In presenting to the Public a New Periodical Publication in a department of Science where so many excellent Journals already exist, the Editors conceive it due to the Public to state the grounds on which the Work is undertaken.

On the opening of the Continent a vast field for enquiry was presented to the *Medical World,* and many were anxious to take advantage of an opportunity so eagerly sought for, but so long denied. The Editors of the present Work were of that number; and, during a continued residence in *France, Italy,* and *Germany,* they had abundant grounds for believing, that our knowledge of Foreign Medicine and Surgery was imperfect, and in many cases incorrect. Assiduously engaged in acquiring for themselves just and complete ideas of the Doctrines and Practice of these Countries, they were imperceptibly and very naturally led to wish to communicate what they had gained to their own Nation, which was evidently at a loss to judge of the contradictory statements which had been laid before the Public upon these subjects. In pursuance of these feelings, they have been induced to associate themselves as the Editors of a Journal, which rejecting equally the extravagant praises of one set of Reporters, and the indiscriminate censures of another, and cautiously avoiding the hasty judgments, which are formed from prejudice, and tinctured by political or party feeling, will contain an authentic and candid account of Foreign Medicine and Surgery.

The Editors are well aware, that some of our best Journals devote a small portion of their pages to the improvements made on the Continent; but they conceive this to be only an admission of the importance, without a sufficient execution of the desired object.

No expence or labour has been spared to render this Work worthy of the public patronage. The Editors have personally solicited the assistance of the most eminent men in their different departments abroad; and, it is with no small feeling of honest pride and satisfaction, that they pledge them-

selves as being immediately supported by men, who are equally ornaments to their countries and their profession, and whose original communications will occupy a prominent part in the intended Work.

Independently of this powerful support, the Editors have at each town of importance engaged the assistance of an active and intelligent Correspondent, who will forward them all that is new and interesting. Arrangements of this kind have been made at *Paris, Pavia, Vienna, Dresden, Göttingen, Hamburgh, Leyden, Copenhagen*, and *Warsaw*. But it is not to the Continent alone that they confine their labours. *America* has already proved so fruitful in all that is interesting to the Profession, that they anticipate much pleasure and information, both to their readers and themselves, by the successful termination of the arrangements they are now making in that country. The *East* and *West Indies* will also come within the scope of their plan, especially in regard to Epidemic Diseases, and interesting subjects of Natural History and Medical Botany.

The Journal will contain, besides Reviews and Original Communications, copious Extracts from all Foreign Journals, a complete Catalogue of all new Foreign Works, with short Notices of such as do not come under the Province of a Review, and all Miscellaneous Intelligence connected with the Progress of Medicine and Surgery abroad.

The Editors have been induced to give to a more than ordinary portion of this JOURNAL, the form of an analytical and critical Review, that they might avoid the temptation of admitting into their Work, such ephemeral communications as constitute the mass of many Journals; communications seldom dictated from any wish to add to the common stock of knowledge, seldom arising from an intimate acquaintance with the subject under discussion, often coming from men of no credit or authority, and often bearing the stamp of vanity and ignorance. To such a height has this proceeded, that the slight degree of credit to be given to many Periodical Publications, has become proverbial. Yet, there is nothing in the nature itself of a Periodical Work, to render such defects inherent. There even exist a few works of this class, which have ever been excepted from the general condemnation, and which are quoted as reputable authorities in the history of

human knowledge. Next to their sedulous regard for truth, this has, in a great measure, arisen from the Editors of the Journals in question having rejected all trifling and chance Essays, and from their having presented every thing they had to communicate to the Public in a didactic form.

A prominent feature in the QUARTERLY JOURNAL will be its severe impartiality. Neither timidity on the one hand, nor the love of country on the other, shall tempt the Editors of this Work to abandon the principles with which they set out. Whatever may be their respect for great names, they feel that they must be still more the friends of truth, if they wish to execute the task they have undertaken with fidelity to the Public, and with benefit to the Science they cultivate. These professions can be made with sincerity, for the very nature of the Work frees it from all local interests or party views.

Independently of the advantages which the Editors trust will accrue to the Profession, by the publication of this Work, it is not unreasonable to hope, that its circulation may advance another and a higher object. They flatter themselves they will not be accused of enthusiasm, if they adopt the opinion which all great and good men have ever held: That nothing tends so much to do away the bitterness of national prejudice, and the arrogance of national pride, as the liberal intercourse of learned men of different nations; as the exchange of scientific improvements, and an intimate acquaintance with the merits and excellences of each other. Should the Journal of Foreign Medicine and Surgery, in its particular sphere, contribute in any degree to this end, the Editors will have the satisfaction, the purest allotted to man, of having exerted themselves successfully in a good and noble cause.

Under such feelings, they cannot, perhaps, conclude more appropriately, than by assuring the readers of this Prospectus, in the words of a very celebrated author, that

" Their labours, slight and imperfect as they are, are
" designed for the service of truth, by those who would be
" willing to attend and grace her triumphs; as her soldiers,
" if they have had the honour to serve successfully under her
" banners, or as her captives tied to her chariot wheels, if
" they have, though undesignedly, committed any offence
" against her."

THE

# QUARTERLY JOURNAL

OF

# FOREIGN MEDICINE AND SURGERY.

NOVEMBER, 1818.

## ART. I. *Biographical Account of A. F. Marcus, M.D. late President of the Royal Bavarian Commission in Franconia, and Director of the General Hospital at Bamberg, &c. &c. &c.*

THE subject of the present Memoir was born at Arolsen, on the 21st of November, 1753. The early indication of talent which he gave, and the rooted dislike he testified to the commercial situation for which he was originally intended, determined his parents to bring him up to medicine. He received the first elements of his education from private teachers; and, in the thirteenth year of his age, entered the Gymnasium of Korbach, far better prepared than most boys of his standing. Here he attracted attention by the extraordinary facility with which he made himself master of the learned languages and the elements of philosophy; a facility the more deserving of remark, as it was conjoined with great power of retaining what he learnt, with unwearied diligence, and with an ardent thirst for knowledge. We dwell more minutely on these qualities, that we may trace the causes which led to Marcus's future fame, and enabled him to overcome the impediments which fortune and religion had thrown in his way.

In 1769 he left Korbach and entered himself at the University of Cassel, then particularly distinguished by the lectures of Stein, perhaps the most celebrated teacher of midwifery in Germany. Marcus's principal object was to acquire a thorough knowledge of anatomy, which he here effected under Matzkopf and Huber. With this foundation he entered the University of Göttingen, in the year 1772.

The "Georgia Augusta" at that period, contained a combination of talent which entitled it, perhaps, to the first place amongst the German Universities. In every department of science, the professors were distinguished by their superior talent, particularly in Natural Philosophy and Medicine, which were taught by Baldinger, Richter, Wrisberg, Rud. Vogel, Murray, Erxleben, and Gmelin, men who never failed to communicate to their pupils that ardour with which their own labours were pursued. To Baldinger he was most indebted. This excellent teacher took every opportunity of encouraging young Marcus, directed his mind to proper objects of study, and particularly recommended to his attention the best English works on medicine. After three years study he received his degree as Doctor of Medicine, on the 21st of August, 1775.

The favourable circumstances under which one of his sisters was settled at Wurtzburg, induced him to visit that city, then celebrated over Germany for its clinical institution under the care of Siebold the Father, so distinguished for his surgical knowledge. A fortunate circumstance introduced Marcus to the notice of Adam Frederick, the Prince Bishop of Wurtzburg, to whom he had dedicated his Thesis. By this fortunate introduction he was enabled to gratify his favourite wish of practising in Bamberg. In 1778 Marcus left Wurtzburg, and commenced his career as a practical physician. He had formidable prejudices to contend with, for he was a Jew and a stranger; but he was fortunate in some of his early cases, and he distinguished himself by his prudent behaviour, agreeable manners, extended information on general subjects, and great powers of conversation.

In the first year of his residence in Bamberg, Marcus accidentally became acquainted with a man who proved the founder of all his future fortune and success. Francis Louis von Erthal, then Imperial Commissioner at Bamberg, consulted Marcus about some trivial complaint, and derived great benefit from his prescriptions. Raised soon afterwards to the dignity of Prince Bishop of Bamberg and Wurtzburg, he did not forget his young physician, whose opening talents he had remarked, and whose future greatness he predicted. So great was his confidence in Marcus, that he shortly afterwards appointed him his physician in ordinary. Soon after this, Marcus renounced his religion, and was publickly baptized in the royal chapel, with much pomp, the prince being his sponsor.

We have already alluded to the amiable qualities of Marcus's mind. These daily endeared him more and more with the excellent prince, to whom his medical assistance had become

indispensable. Yet, despising the intrigues and tinsel of a court, he chose rather to devote his influence and his time to the interests of humanity and science; and in a small German state, by the munificence of his prince, and by his own unwearied exertions, he raised institutions which were soon to become models for all Germany.

The first care of Marcus was to provide a proper teacher of midwifery, which had been much neglected in that part of Germany. The improvement of surgery was his next object; but he considered every measure incomplete without the foundation of a general hospital. This hospital was built under his direction, for the reception of 120 patients. The ground floor was destined for external, the upper floor for internal diseases. The wings of the building were appropriated to contagious disorders. A scrupulous attention to cleanliness and ventilation, the construction of baths, cheerful airy passages, abundance of beds and frequent changes of linen, nurses selected with peculiar care, and lastly, the beautiful situation of the house, in the midst of a large garden, situated at a convenient distance from a navigable river, rendered this hospital a model for neatness and comfort.

Marcus had been early impressed with the importance of clinical instruction; and the number of students which the fame of his new hospital had attracted, soon enabled him to gratify his favourite wish, of founding a clinical school. Perhaps no one was ever better fitted for the task, and he entered upon it with all his characteristic ardour. He carefully exercised his students in the taking of cases, and directed their attention to the investigations of pathological anatomy.

At the same time his attention was unremittingly directed to the improvement of the healing art in general. He appointed three teachers to the surgical school, which he placed on an entirely new footing; he brought medical baths into notice, and was executing other improvements, when the death of the Prince Bishop interrupted all his plans. While the death of his patron and friend deeply affected his mind and his prospects, it caused no diminution in his zeal. His influence lost, and his income reduced, he could not pursue his meditated improvements; and he now devoted himself entirely to his clinical labours.

The death of the prince occurred in a very interesting period in medicine, precisely when the system of John Brown was beginning to be known in Germany. The state of medicine imperiously demanded a reform. The German physicians were followers of the humoural pathology, or else of what was called rational empiricism; but they could not be said to entertain scientific views of either. It was natural that the new and singular

system of Brown should make a deep impression on the medical world of Germany, for it excelled particularly in those points in which the reigning theories were deficient; namely, in unity, and in a plausible explanation of morbid phenomena. It has been made a matter of bitter reproach to Marcus, that a mind of his acuteness should have been deceived by the Brownonian system, and that he should have done so much to propagate its dangerous doctrines. In this point he was associated with many eminent men of all nations, whom the lively mind of Brown delighted more than the uninviting doctrines of the humoural pathology. This system was a necessary evil; it was a step to something better, and by the experiments and discussions to which it gave rise, those scientific and philosophical principles were developed, on which medicine is now studied. His work, entitled "Clinical Examinations of the Brownonian System," had an amazing influence in promoting the Brownonian system in Germany, and brought a crowd of students from all parts, to learn these tempting doctrines from so celebrated a teacher. The originally insignificant Bamberg became the first medical school in Germany.

Soon after the system of Brown had shaken the venerable fabric of ancient doctrines, a remarkable revolution took place in German philosophy and metaphysics, through the labours of Schelling and A. W. and F. Schlegel. These men, the founders of that system of metaphysics, known in Germany under the name of *Natur-Philosophie,* had come to Bamberg to witness the clinical experiments of Marcus. He appears to have become intimate with them, and to have adopted the principles of their philosophy as the ground-work of his lectures.

In 1801 Marcus began to publish his "Magazin für specialle Therapie und Klinik." The object of this periodical work was to oppose empiricism; to give an account of his labours in the hospital, and to lay the principles on which he taught, open to the public. The first three numbers of this work were written in the spirit of the Brownonian theory. In the second volume the "Natur-Philosophie" prevailed. In the second number of the second volume, the Essay "On the Proceedings in the General Hospital of Bamberg," contains some very acute remarks on the relations of medicine to philosophy in general, and to the Natur-Philosophie in particular. In it Marcus explains his views of the application of the "Natur-Philosophie" to medicine, in much the same terms as he had formerly employed in speaking of the Brownonian system; and to the cutting reproaches that were made him on all sides, on his changes of theory, he thus replies:

"To the accusation that we are to day the slaves of one theory, and to-morrow do homage to another; we shall not plead guilty, until it has been proved, that we have not gained by the change. The Brownonian system, as originally introduced and recommended by us, even now, stands on an infinitely higher pinnacle than the party-coloured doctrines of ancient medicine. All that can be expected from us, who only aspire to the name of practical physicians, is, that we shall advance with the spirit of the times, that we shall look into the gaps in our own hedges, and seek the better where it may be found. To distinguish the particular error or failing of an individual is an easy task; but, it requires no little courage, no little firmness, and no little opportunity when once enslaved by the bonds of opinion, to break our chains and reconquer the freedom of the mind *."

At the occupation of Bamberg by the Bavarians, in 1802, a new and brilliant career was opened to Marcus. The new government offered him the honourable place of director of the Medical Institutions in the Franconian principalities. Marcus sought to make himself worthy of the confidence of the new government, by an extensive and salutary reform in the medical department of the principality. His first object was to provide, at the expence of government, proper medical attendants for the people and peasantry, in situations where poverty or want of population prevented regular practitioners from settling, and where quackery and spells usurped their place. Bavaria was the first country, and Bamberg the first district where this was adopted, and in the first year of the new government Marcus appointed twelve such practitioners, with salaries of 750 florins, (about 75*l.*) This plan has since been adopted in all Germany.

The improvement of all the humane and medical institutions, as the Elizabeth Hospital, &c., and the foundation of a General

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* We cannot help contrasting this defence of the ingenious and restless Marcus, with the calm and philosophical spirit which distinguished one of his cotemporaries under similar circumstances. When all Germany was enlisted on different sides of this celebrated controversy, the opinion of Blumenbach was anxiously enquired by every one who visited Göttingen, in the categorical terms of, Are you a Brownonian, or an anti-Brownonian? to which his uniform reply was, I am no ———onian at all (Sind Sie Brownianer oder anti-Brownianer? Ich bin Kein ———ianer). After relating this anecdote at his lectures in his own exquisite style, Blumenbach observed, "To be serious, gentlemen, if during a space of forty years you had seen as many theories as I have, appear in the horizon of science, with all the splendour of the morning sun, and then sink into oblivion with almost the rapidity of its diurnal course, you would receive all new theories with extreme caution."

Alms House, were the work of Marcus. One thing was still wanting; the establishment of a Lunatic Asylum on the genuine principles of medical police. The government appeared favourable to his wishes, and he set about it with eagerness. After deliberately digesting his plan, the house was built on the most simple but important principles. Not only the sexes were separated, but the different patients were divided into classes, according to the character of their insanity, and every well authenticated method of cure brought into use. This is, perhaps, the best institution of the kind in Germany. In order to supply the deficiency in the education of the common midwives, Marcus proposed to government to erect a new Lying-in-Hospital, which he effected. A scheme also of great novelty and utility was his institution for nurses, which fulfilled the double object of providing skilful nurses to individuals, and securing to this useful class of the community an asylum in their old age.

The University of Bamberg was dissolved in 1803, and no hopes appearing of its revival, Marcus employed all his influence, to have at least, a Medico Chirurgical School, to which Walther and Kilian were invited. By the combination of this medical school with the Lyceum, the whole assumed more the appearance of academical education; as independently of medical and surgical instruction; lectures on history, logic, mathematics, philosophy, astronomy, and mineralogy were given.

Of the "Magazine for special Therapeutics, Clinical Medicine, and Medical Jurisprudence," three numbers appeared. In this there are some excellent articles, among which the Essay "On the Management of Clinical Institutions," truly deserves the name of classical. The "Annals of Medicine," were the joint production of Schelling and himself.

In his treatise, entitled "An Attempt to form a Theory of Inflammation," he maintains the identity of fever and inflammation, and places both in the arterial system.

The second volume of his "Special Therapeutics," is perhaps the best of Marcus's works; it is practical, the most important topical inflammations are described with infinite precision, and many shades and varieties of these diseases, hitherto unnoticed, are explained and illustrated. In speaking of catarrhal fever, Marcus ascribes it to inflammation of the mucous membrane of the trachea, and puerperal fever to inflammation of the peritoneum. Many cases of inflammation, as those of the heart and spleen, he describes as being by no means of such rare occurrence as is generally imagined. He enlarges very much on inflammation of the brain, and attempts, with much ingenuity, to

establish its identity with typhus. Of antiphlogistic means of cure he speaks in terms of the most decided approbation, showing the greatest anxiety to restore to them their ancient rights in inflammatory disorders and fevers.

In his preface to the second part of his "Heads of Special Therapeutics," he expresses an anxious wish that he may live long enough to see the "antiphlogistic plan" every where triumph; and his wish was fulfilled, for his principles were adopted by his associates, and carried by his numerous scholars into every part of Germany. Marcus soon heard from them of their astonishing success in the treatment of fever and inflammation, by blood-letting and cooling remedies; and many ardent partizans of the Brownonian theory, who still defended a stimulating plan in fever and inflammation were convinced of their error, and adopted the antiphlogistic system.

In 1809 a prize question was proposed by Napoleon, the subject of which was Cynanche Trachealis. Marcus, in his dissertation on the subject, described it as a purely inflammatory disease, and strongly opposed the idea that it ever partook of a spasmodic or asthenic character. He conceived its seat to be in the trachea, and recommended all the usual antiphlogistic remedies.

In 1810 Marcus began the publication of his "Ephemerides of the Healing Art." The object of this work was to communicate to the public the daily proceedings in the hospital, the progress of epidemics, and the influence of the weather upon the production of disease. Great attention was paid to the relation of cases, and he also occasionally answered the attacks made upon his doctrines. He had abundant scope for such disputes; for in consequence of the war, typhus became epidemical in the year 1813, and the number of cases which he treated, confirmed him more and more in his opinion of the identity of this disease with inflammation of the brain. The excellent effects of blood-letting and the antiphlogistic regimen, corresponded exactly with the results of his dissections, and added great weight to the arguments he had advanced in support of his theory.

The typhus, from the increase of French prisoners, extended daily, and afforded him numerous opportunities of putting his theory to the test of clinical experiment. His diligent investigations led to an increasing vigour and boldness of his practice. Although Marcus's theory that typhus and inflammation of the brain were one and the same disease, was by no means generally allowed; still the greater and more respectable part of the German physicians were agreed on one point,

namely, that inflammation and not debility, was its characteristic. Hence they were unanimous on the means of cure to be employed, and the typhus occasioned by the war was treated with general and topical blood-letting, cold applications, and the rest of the antiphlogistic treatment.

Notwithstanding that the war was so unfavourable to literature in general, and to the publication of books in particular, the "Ephemerides" were regularly continued, and in a short time eight volumes were published. His "Treatise on Hooping-Cough," was the last work of Marcus, and the preface to this work was dictated on his death-bed, but he did not live to see it published. It appeared on the very day he died. Marcus's object in this work was to prove the identity of hooping-cough and bronchitis, to show the general fallacy of the common theories on the subject, and the inutility of the remedies which as yet had been proposed. He sought to throw light on the nature of this disorder by a relation of accurate cases, and then pointed out what he conceived to be the most appropriate remedies. The very origin of this work was as practical as its execution; for the hooping-cough was epidemical in the spring and autumn of 1815, and Marcus did not neglect so favourable an opportunity for observation.

Most of his works are written in a light, easy, and rather elegant style, and where he can lawfully indulge in wit and irony, his touches are those of a master. The general character of his writing betrays a man of deep and original thinking, and if we view the extent of his labours as an author, we shall wonder at the fertility of his genius. If we reflect, that for the preceding twelve years Marcus edited two periodical works, and largely contributed to others; and that in that period he produced eighteen different works, we shall have great reason to admire his industry and scientific ardour. A zeal the more deserving of admiration, if we call to mind the awful and important times in which he lived. This is not the only cause why his memory should long be dear to his country; the general example of his life, his exertions as a member of the state, and the humanity and skill he manifested as a practitioner, are all points entitling him to our admiration. But we may view him in a still higher point of view, as the friend of suffering humanity, and in this character, the many valuable institutions which he founded in the beloved city of his birth will long be the proudest monument of his name. As a member of the state, the same qualities which made him so good a physician, rendered him a useful statesman. Discrimination, decision, and quickness, are essential to both situations; and when the great

knowledge of mankind which a physician generally possesses, is combined with the habits and business of a statesman, they form, as they did in Marcus, an invaluable friend to the best interests of mankind.

Marcus's appearance was by no means prepossessing, he was small in stature, and rather inclined to be corpulent. The impression thus produced, however, soon wore off: he possessed great power of winning attention, was of an open, sociable temper, and fond of society and its pleasures. Here he was qualified to shine with peculiar lustre by the advantages of an excellent education, and by those polished manners which are to be acquired only in good society. He could, besides, contribute much to its pleasures by a thousand ways, and brought into it such cheerfulness, and so much wit, tempered always by good-nature and good breeding, that he was equally a welcome guest to the serious and to the gay.

Marcus died on the 16th of April, 1816, in the 63d year of his age, of an affection of the hip-joint, which was accompanied by inflammation, suppuration, and hectic. All his fellow citizens followed the last remains of him who had so long conjoined the endearing character of a physician and friend.

There is abundant occasion to profit by the errors of Marcus, but there is still greater reason to admire and imitate him. Amidst the labour of an extensive practice, and the public duties to which he was called, he never remitted in his indefatigable zeal to advance his profession, and contribute to its improvement. He had this rare and invaluable quality, that he never was ashamed to own that he was wrong, and to reject whatever he was convinced was so, however brilliant it might appear. And he was well rewarded for his courage, and for his long and unwearied exertions, for he had the satisfaction of seeing the practice which he had laboured to establish, universally adopted.

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ART. II. 1. *Memoires Physiologiques et Pratiques sur l'Aneurisme et la Ligature des Artères, par J. P. Maunoir, Membre de la Societé de Médécine à Paris, &c. &c.* A Genève. 1802.

2. *Recherches et Experiences sur les Blessures des Artères, par P. A. Beclard, Chef des Travaux Anatomiques de la Faculté de Médécine de Paris, &c.*

3. *Memoria sulla Legatura delle Principali Arterie degli Arti, con una Appendice all' Opera sull' Aneurisma, di Antonio Scarpa, Professore Emerito, e Direttore della Facoltà Medica della R. Imp. Università di Pavia, &c. &c.* Pavia. 1818.

*Memoir upon the Ligature of the Principal Arteries of the Extremities, with an Appendix to the Work on Aneurism of Antonia Scarpa, &c. &c.*

It is flattering to see our great rivals in surgery imitating us in our experiments and researches upon two of the most important points of surgical practice, Aneurism and Hernia. Upon both these subjects we have had many essays from the French surgeons during the last four years; at present, all the young surgeons are busily employed in inventing *Presse Artères,* and in discussing questions, which we believe have been for some time settled in this country. The authors of these essays assume so much merit to themselves, that were we not to look to dates, and to the successive steps of our improvements at home, we should imagine that their researches merited the praise of originality as much as our own.

Before taking notice of the works at the head of this article, we shall take a rapid view of what has been done by the French surgeons, during the last ten years, to improve the treatment of Aneurism.

It will scarcely be credited, that it was a question in France, so lately as the year 1814, whether the operation of Mr. Hunter, for the cure of Popliteal Aneurism, or that of laying open the sac, should be preferred. In *the Traité des Maladies Chirurgicales,* by M. Boyer, we even find a decided preference given to the old method.

"We see that the method of Anel, said to be Hunter's, has the support of a certain number of facts, but these facts are not sufficiently multiplied to permit us to decide that this method should be generally preferred to the old operation. The success which I have had in following the old method, the difficulties and inconveniences of which have been much exaggerated, has prevented me from performing that of Anel, which does not appear to unite all the advantages which have been attributed to it, and consequently I have not put that operation into practice."

It is scarcely fair to take the opinion of one author as the criterion by which we are to judge of the progress which the French have made in the surgical treatment of the Arteries: but the character of Boyer stands deservedly high in France, his book is considered by the students as the best modern system of

French surgery, and it is well known, that his work on anatomy is almost the only one used in France. But let us take M. Roux *, and among all the modern French authors there is not one who is more worthy of being received as an evidence on the subject of Aneurism, for his works display much research into what has been done in England, and he is the only French surgeon of eminence, who has visited this country since 1814.

He has published three books, which give a good idea of the notions entertained in France during three different periods within these ten years. His first book, *Melanges de Chirurgie et de Physiologie*, was published in 1809, and then we find him a decided advocate for the old operation for Popliteal Aneurism. His second book was published in 1813, after he had seen some modern English works, and accordingly in his *Nouveaux Elemens de Medicine Operatoire*, he is not quite so warm in his praise of the old operation. In 1815, he published the narrative of his journey to London. The effect of his residence among us, has been to induce him to perform Mr. Hunter's operation in every case, and even in some, where we think the old operation should have been preferred. We have made extracts from each of these books, which we hope will, in an historical point of view, be interesting.

In the *Melanges de Chirurgie et de Physiologie*, he draws a comparison between the operation of Mr. Hunter, and the old method of opening the sac, and makes the following remarks:

"Under different circumstances, these two methods have each their advantages and inconveniences, and an unprejudiced mind cannot discover, in the parallel drawn between them, any circumstance which can give to the one, an exclusive preference to the other. If we consult the results of experience, we find the same doubt, the same uncertainty. The ordinary method of operating, and that of Hunter, are supported by an equal number of successful results, and the failures bear the same proportion. It must however be allowed, that the latter seems to offer fewer probabilities of success, and that the advantages which it seems to have in some respects over the ordinary method are not so great as they appear to be."

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* We have no doubt that many of our readers who have been in Paris will ask, why we do not refer to Professor Dupuytren. We wish to confine ourselves to what has been published, and we are not aware that M. Dupuytren has published any thing upon the subject of the arteries. There are some of his cases given in Cruveilher's Morbid Anatomy. We witnessed the operation in one of these cases, and there were not in his mode of operating any important particulars in which he differed from his cotemporaries, for in the same operation he used *Ligatures d'Attente* and also the *Presse Artères* of *Deschamps*.

M. Roux's great objection to the operation of Mr. Hunter, was the dread that the anastomosing vessels would be destroyed, and in consequence of this, he performed the old operation on a patient which he had under his care at that time. As we seldom see the description of the old operation for Popliteal Aneurism, it will perhaps be interesting to relate this case, which he introduces by the following eulogy:

" Could we unite and examine all the cases in which the operations for Aneurism have been successfully performed, either by the ordinary method, or by that of Hunter, we should find few where the operation has been attended with results more simple, or success more remarkable."

The operation was performed in the presence of Leroux, Deschamps, Boyer, Dupuytren, &c.

" A tourniquet was placed on the middle of the thigh, over the course of the femoral artery, and a stout assistant compressed the artery at the groin. I made the first incision of the integuments about seven inches long. The second incision, through the aponeurosis, exposed the sciatic nerve, which, though immediately attached to the aneurismal tumour, was not degenerated or flattened, as it frequently is. It was easy to pull the nerve aside, and to keep it under the external edge of the incision. I then opened the tumour parallel to the course of the popliteal artery, and on the inner side of the sciatic nerve. It contained a quantity of liquid blood and of dense clots which adhered firmly to the walls of the cyst, notwithstanding the short duration of the disease. These clots being removed, I made the interior of the cyst perfectly dry. We could then discover at the bottom of the wound the opening of the artery, or rather the blood flowing from it when the tourniquet was relaxed, for the opening itself was not very apparent, which was a source of some difficulty in the succeeding steps of the operation. It was not indeed until after several ineffectual efforts, that I was enabled to pass a female sound into the opening, with the intention of lifting the artery and facilitating the application of the ligatures. This instrument was directed towards the superior part, that I might apply the two upper ligatures, after which I introduced it into the lower part, as far as the bifurcation of the popliteal artery, and passed under it two other ligatures; both the superior and inferior ligatures were introduced by the assistance of the needle of M. Deschamps. The artery was tied above and below the opening, by the two nearest ligatures; the inferior was done in the common way by two knots, but for the superior I made use of another instrument of M. Deschamps, known by the name of the *Presse Artère;* by the aid of which the artery was not puckered, as it must always be by the circular ligature, but it was flattened by the little plate which forms the end of the instrument; I took care to moderate still more the pressure upon the artery by putting under the plate a small piece of

agaric secured by a thread. After the superior and inferior ligatures were applied, the tourniquet was relaxed. The blood did not flow from the opening in the artery; I then proceeded to the application of the dressing. The *ligatures d'attente*, being each enveloped in a piece of fine linen, were placed at the angles of the wound; the wound was filled lightly with charpie, so as to avoid the slightest pressure, and at the same time to preserve the vertical position of the *presse artere*."

It is needless to follow him in the description of the whole progress of the case. He continues,

"It was not necessary to draw either of the ligatures tighter, nor to move them, to hasten their detachment. The superior came away of itself on the eleventh day, the inferior on the thirteenth without any hemorrhage; some days after I withdrew the *ligatures d'attente*, so that there only remained a simple wound, &c."—"The wound was entirely closed on the sixty-second day after the operation. I ordered the patient to use the bath to diminish the stiffness of the joint; he left the hospital the latter end of October, walking on crutches, and resting only the point of the foot on the ground."

Let us not forget, that this was supposed to be the most successful case in France, in 1809.

In the *Nouveaux Elémens de Médécine Operatoire*, there is a long paper on Aneurism, in which there is much valuable matter. Before M. Roux published this book he had learned the history of some of the operations performed in England, and now we find him less averse to the operation of Hunter; but still he appears to evince great alarm, lest the limb should be endangered by the destruction of anastomosing vessels. It is not necessary to make any quotations from him, expressive of the danger of destroying anastomosing vessels by tying the femoral artery in the method of Hunter, for we know that no such danger exists. The same reasoning, and the same dread of losing the anastomosing branches by tying the crural artery above the profunda, is to be found in Boyer and Richerand, and in the enumeration which M. Roux makes of the several cases in which the operation of Hunter is to be preferred, we find that he is still swayed by the same fears.

"The operation of Hunter is peculiarly adapted to aneurism of the carotid or the crural artery at the groin, for no more collateral branches are destroyed by this operation, than there would be in opening the sac. Though some branches would be destroyed by performing this operation upon the axillary artery, still the danger of laying open the sac of an axillary aneurism would be so great, that the operation of Hunter is not less indispensable for the aneurisms of this artery, than it is for those of the carotid and the crural at the groin."

It appears to us that some of the cases which M. Roux has given as the most favourable for the operation of Hunter, are the least so; for example, he performs it in the cases where aneurism has formed in consequence of a wound of the artery. In support of this, he gives two cases where, upon the authority of M. Mirault, of Angers, the ligature of the artery, above the wound, was sufficient. In one case the humeral was the artery said to be wounded, in the other the femoral. We doubt if the femoral were really wounded in this case, for on referring to the report we do not find sufficient evidence of that fact; it appears more probable that a branch only was wounded. We have seen the operation of Hunter performed unsuccessfully, in two cases of aneurism consequent upon a wound of the artery, and we have seen the preparation of a third case, where the same operation was performed and failed; that is to say, the inosculations were so free that hemorrhage returned by the lower orifice. In the first case the popliteal artery was ruptured by a spicula of bone. The second was a wound of the femoral artery by an iron spike, and the third was a stab of the femoral artery by a knife; in each of these cases, the hemorrhage returned by the lower part of the artery. There is, in the *Bulletins de la Faculté de Médécine*, for 1813, a case by the same Mirault, of an aneurism of the femoral artery, in consequence of a wound some considerable time before. Mirault operated according to the method of Hunter, that is, he tied the artery above the aneurism. The sac burst, two hemorrhages ensued, and the second carried off the patient, on the fifteenth day after the operation. It is rather curious that the first case which occurred to M. Roux, after his return from England, should be one which forms a strong argument against performing the operation of Hunter, for a wounded artery. As it is an instructive case, we shall transcribe it from the translation of his narrative.

"Three months ago a man was brought to La Charité, almost at the moment he had received a stab, with a knife, in the fore part of the thigh, a little below the middle; the instrument had made a deep narrow wound; the crural artery was opened. Instead of endeavouring to discover it at the wound, for the purpose of placing one ligature above, and another below the wound, I proposed tying it at some distance from the point at which it was opened. I performed the operation therefore in the lower part of the inguinal space, as if I had been adopting Scarpa's plan, in the manner practised by Hunter. The limb preserved its natural warmth, nor were we a moment in fear of gangrene, but the tenth day of the operation there was hemorrhage. I used, without effect, the *ligature d'attente*, which I had placed

above the two ligatures with which I had stopped the circulation in the artery. I was obliged to expose the artery above the place where it had been tied. Fresh ligatures were applied immediately below the origin of the profunda muscularis, this immediately stopped the hemorrhage which had its rise on the side nearest the heart, but on the following morning fresh hemorrhage took place from the lower end of the artery, even, perhaps, from the lower orifice, which, as I suspect, had been completely cut across by the stab of the knife, in the first instance. I was then under the necessity of laying open the artery, below the wound, and applying ligatures there also. No further bleeding took place."

Had M. Roux never been in England, we believe that he would have performed a different operation in this case, for in his desire to imitate what he conceived to be English surgery, he neglected the proper rule of practice, which is, in such a case, very simple; enlarge the wound, and tie the artery above and below the opening. Although the reasons for this plan are very easily illustrated by the injection of a limb, still we know it is much neglected. We have, ourselves, been witness to a case which terminated fatally, in consequence of its being forgotten. We have seen an extraordinary example of the quickness with which the blood passes into the lower part of the femoral artery by anastomosing vessels, when the upper part is tied; in performing amputation very high up, it was necessary to tie the inguinal artery as the first step of the operation; on cutting through the adductor muscles and the femoral artery, the blood spouted from the lower part, per saltum, so that it was necessary to hold it until the flap of the external muscles was completed. Sabatier relates a case, where Saviard operated on an officer whose femoral artery was pierced by a sword, he opened the tumour, cleared out the clots, and tied the vessel above and below the wound. The officer served several campaigns afterwards. Sabatier was not quite so successful in another case, owing to his founding his practice on an erroneous theory. A strong young man was wounded in the inner and upper part of the thigh, he lost much blood at the time, presently there rose a pulsating tumour. Two tourniquets were put on the limb, one above, the other below the wound, the artery was exposed, and a round hole was seen in it; ligatures were put above and below it, but were not drawn tight; compression was made on the artery, the patient eventually did well, although he had repeated hemorrhage. The idea at that time was, that when an artery was cured by compression, it remained pervious, but Sabatier subsequently abandoned this theory.

From the cases which have been given, we may conclude that in the true aneurism, the operation of Hunter is to be preferred, while, in the false aneurism consequent upon a wound of the femoral artery, the necessity of tying the vessel above and below the rupture, is as necessary as in a simple wound of the artery, so in such a case the old operation of opening the tumour is to be preferred. We must not forget, however, that the ligature of the humeral artery has been, in some cases, sufficient in aneurism at the bend of the arm.

The French surgeons have said that the operation of tying the superficial femoral artery has not been more successful than the old operation. We are not suprised at this statement, when we see the manner in which they propose to perform this very simple operation. Boyer says,

" If I did practise it I would expose the artery in the most favourable point, and make an opening in it sufficient to receive a female catheter, I would then put double ligatures on the upper part, about four or five lines distant from each other, and a double ligature below. In short, in regard to the number and situation of the ligatures, I would act exactly in the same manner as I have recommended, in speaking of the ordinary or ancient method."

It must appear rather curious to our readers that a female catheter should be passed into the artery. It was an idea of Monro's, to simplify the application of the ligature on the artery, in the old operations, and it appears to be highly esteemed by several of the French surgeons. Professor Richerand says,

" In operating according to the method of Hunter, we are deprived of the advantage which is gained by passing a sound into the vessel. The resistance of this instrument serves to distinguish the artery in the mass of parts which surrounds it, and facilitates the passing the ligature around it; this advantage will not appear slight, except to those who have not operated."

Richerand has a great desire to facilitate the operation, for he even recommends us to cut across the sartorius if it should prevent us seeing the artery! M. Roux was also an advocate for passing the sound into the artery, " for if we do not do so," he says, " we run the risk of either pricking the coats of the artery, or of including too much of the neighbouring parts."

We shall conclude this discussion on the popliteal aneurism, by giving a case which M. Roux operated on after he returned from England, and compare it with one which we saw lately in this country.

" I performed the operation in the place where it is now practised in England. The artery was completely insulated from all adjacent

parts, even from the crural vein, for the space of an inch. I placed four ligatures at about two lines distant from each other. Thus there were two ligatures to intercept the blood, the first and last being only left as *ligatures d'attente.* I then followed the recommendation of Scarpa, in applying upon the artery a small cylindrical body, an inch long and two lines diameter, upon which I put a piece of linen, which had been dipped in melted plaster. On this I tied the two middle ligatures. I took care not to let the wound unite, and kept the lips separated by soft lint."

The case did well, notwithstanding all the irritating mass in contact with the artery; compare it with the following, which we saw performed in one of the hospitals of this metropolis. The first incision of three fingers' breadth exposed the sartorius muscle, the edge was carefully raised, and the sheath of the vessels exposed; the sheath was slit to the extent of three quarters of an inch, and the artery exposed. A ligature of three threads was put around the artery, and when tied, one end was cut close to the knot, the other was passed by a needle through the integuments, about an inch below the inferior margin of the incision, so that there was nothing left to prevent adhesion. The wound was brought together and united by the first intention, and on the fifteenth day, the ligature was drawn from the small hole in the integuments, through which it had been passed. We understand that the patient left the hospital a very short time after.

Thus the operation of aneurism, as performed by our English surgeons, is reduced to great simplicity; a single ligature is applied, and care is taken to disturb the parts as little as possible; and on this latter circumstance, we are inclined to believe, all the excellence of our manner of operating depends.

The operation of tying the external iliac is now so generally successful, that any observations drawn from the French surgeons can have very little interest; but on referring to their surgical works, we see much reason for national exultation. Within these few years, the operation has been frequently repeated in France, and with success. But it was a long time before the French surgeons ventured to perform this operation. In 1808, Richerand says, " that there are some aneurisms, where it is impossible to tie the artery above the tumour, and either the debilitating system, or the ligature of the vessel below the tumour must be the rule of practice ;" and as one of these cases, he instances the aneurism at the groin. In his remarks upon this aneurism, he says,

" Can we be permitted to cut through the crural arch, and to search for the external iliac, that we may tie it? If we can believe the observations in the *Bibliothèque Britannique,* this bold operation has

been done in London, with success, by Doctor Abernethy: they report, that this practitioner did not hesitate to penetrate into the pelvis, by cutting the fallopian ligament. Leaving out of consideration the difficulty of an operation, which must be performed *en sous œuvre*, and without the assistance of the eye to conduct the needle, would not the ligature of the iliac vein and nerves occasion gangrene? What vessels would nourish a limb absolutely deprived of all anastomoses? And suppose it did not fall into gangrene, which is very improbable, would not enormous herniæ be the inevitable result of such a destruction of the abdominal wall? &c. &c."

With these two etceteras he leaves the subject as one too ridiculous to dwell upon.

In 1814, Boyer, speaking of the inguinal aneurism, says,

"When it is not possible to compress the artery above the tumour, the disease is incurable. Notwithstanding the success of Guattani and Mr. Cooper, we think that no prudent surgeon should undertake to perform an operation for aneurism of the femoral artery, when situated so high as to prevent us stopping the flow of blood, by compression above the tumour. The success of a hazardous operation does not justify the attempt. In surgery, boldness has its limits, beyond which it becomes rashness*."

It is needless now to argue the question of the security of the circulation, after tying the inguinal or external iliac artery, for so many examples have occurred, that no one is afraid that the limb will die from loss of circulation; yet let us not forget the views of Mr. John Bell, which have undoubtedly led to these splendid results. Within these few months, we have seen an operation, in which the common iliac was tied. The limb was not only well supplied with blood for the seven days which the patient lived after the operation, but after death there was fluid blood found in the aneurismal sac, which was a sure proof of the freedom with which the blood passed from one side to the other. Unfortunately the body was not injected. Professor Gibson, of Baltimore, has also tied the common iliac. The patient lived twenty days after the operation, having the limb well supplied with blood.

Unless it were possible to cure the aneurism at the groin by pressure, it was deemed almost a hopeless case, before the operation proposed by Mr. Abernethy. Brasdor, Professor of Surgery to the old School of Medicine in France, proposed to tie the artery below the tumour; Desault also recommended it, and Vernet, an army surgeon, attempted to make continued pressure

* Boyer recommends this operation in his second edition.

on the vessel below the tumour, but, he says, he was obliged to desist, because the tumour increased rapidly. The idea of performing this operation is given up in France, in consequence of the failure of Deschamps; but his operation was performed so exceedingly ill, that it must not be taken as a precedent. Neither Deschamps nor his nine assistants appear to have been aware of a circumstance, which happens very frequently in aneurism, viz. the want of pulsation in the vessel below the tumour. We are not aware that this remark has been made by any author. It does not always occur, but we have seen it several times, and the importance of the remark will be obvious, when we transcribe part of the description of the operation of M. Deschamps.

"The integuments and fascia lata being divided, I proceeded to raise the sartorius muscle, which lies over the artery in the middle of the thigh. After searching some time for this muscle in vain, I traced the great adductor, and found the sartorius thrust inwards. We then looked for the artery, which we expected to find in the situation it usually occupies, but we could not discover the least pulsation or substance that could lead us to distinguish it; several of the assistants endeavoured to find it, but without success; at length one of them carried his finger to the bottom of the wound, towards the tumour under the sartorius muscle, where he thought he could trace the artery. I then detached the whole circumference of the muscle, but could not discover the least pulsation. It was proposed to cut the sartorius across, in order to obtain a more distinct view of the bottom of the wound; although adverse to this opinion, I consented, but our endeavours to find the artery were as unsuccessful as before. At last we returned to our original opinion, that the course of the artery was not altered. The discovery of a nervous filament, which is known to accompany the vessels at this part, and which I had divided to relieve the acute pain which the patient felt in the knee every time the nerve was touched, induced me to adopt the following practice. I passed a needle, mounted in a handle, under the part where we were convinced the vessels were situated, and to obtain our object more certainly, I included a small portion of the adductor muscle. The parts were secured by a presse artère, and above that instrument I placed a *ligature d'attente*."

And so he left his patient, uncertain whether he had tied the artery; and found on dissection, that he had tied both it and the femoral vein. This is a curious proof of the importance of the pulsation, as a guide to the French surgeons in their search after the femoral artery. It will be at once allowed, that the question of tying the artery below the tumour, cannot be fairly

judged of by this case, for an operation so performed above the tumour, would have been fatal.

The French surgeons are unanimous in objecting to this operation; they say, that the tumour is rapidly enlarged by it; but there has been a case in this country, where, after a similar operation, the tumour rather diminished.

This question is not now interesting in considering the aneurisms of the groin; but it is particularly so in aneurisms of the subclavian artery. The attempt to cure aneurism of the axillary artery, by tying the subclavian, has been frequently made both in England and France. Some time ago, the operation was successfully performed by Professor Post, of New York, a gentleman of great talent, and whom we recollect seeing in this country some years ago. But how often has the operation failed, not so much in consequence of tying the artery, as from the circumstance of there being so many large branches going off from the point at which we must tie it. One cause of our great success in the operations upon the carotid and external iliac arteries, is indubitably the fact of there being no branches going off near to the part where the artery is generally tied. In the aneurism of the axillary artery, we may perform the operation of tying the artery below the tumour; and if it be unsuccessful, we may either amputate the arm at the shoulder, or tie the subclavian above the tumour, for we have no dread of the simple ligature of the artery below the aneurism producing the rapid enlargement of the tumour, which the French ascribe to it. Their whole data are taken from Deschamps' operation. We had lately under our care a patient with axillary aneurism, upon whom it was proposed to perform this operation; but the patient being swayed by the opinion of another surgeon, who advised that nothing should be done, procrastinated so long, that the tumour burst, and he died immediately.

We might make the same observations upon the ligature of the carotid artery that we have done upon the external iliac. The operation is now frequently performed in France, although in 1814, Mr. Dupuytren, whom no one will accuse of timidity, waited for a considerable time before he would tie the carotid of a man, who had repeated hemorrhage, from a wound under the angle of the jaw.

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The Memoir, by Professor Maunoir, has been published for eighteen years: it contains much valuable matter. Our object

in bringing it before our readers at the present time, is to shew how much he has been enabled to anticipate his brethren on the continent, by preserving a correspondence with England.

The first part contains a discussion on the question of the muscularity of the coats of the arteries. He considers the fibrous coat to be muscular; but he goes farther than Mr. Hunter, for he not only ascribes to the coats a power of contracting the tube in its diameter, but he insists that an artery contracts longitudinally. By this reasoning, he supports his practice of cutting across the artery, after tying it.

The second part of his Memoir is on the anastomosing vessels, and he comes to the conclusion, that there is no artery accessible to a well educated and courageous surgeon, which may not be tied with a physical certainty that the anastomoses will be sufficient to support the parts below the ligature. He gives a short description of the general distribution of the great arteries, and he remarks, that, even though no great branch be given off by the main artery above the point where it is tied, there still can be no dread of gangrene, for after such an operation, the small branches become enlarged in a proportion greater than the trunks.

He makes a recapitulation of the different methods of treating aneurism, and in speaking of the operation for popliteal aneurism, he remarks, that the Parisians assert, that Desault operated on an aneurism, by tying the artery, leaving the tumour entire; but, continues he,

"I lived two years in the house of Desault, and I cannot recollect to have heard him speak of this operation; it has been no where registered, and it appears to me to have been cited on very vague and uncertain authority."

This testimony is of some importance, as we find that in almost every modern work of French surgery, the merit of this operation is attempted to be taken from John Hunter. Boyer's expression is always "*l'opération d'Anel, dite de Hunter.*"

His next question is in which way the artery ought to be tied, and this brings him to the proper object of his paper, which is to prove the advantage of tying the artery twice, and dividing it between the ligatures. As the paper is summed up in a few propositions, we shall quote them.

"1. The arteries are susceptible not only of a circular contraction, but also contract longitudinally. This action depends on elasticity and muscularity combined, for whether the arteries have longitudinal or spiral fibres, the same effect will be produced.

"2. The existence of a muscular power of the artery capable of

retracting, is proved by the fact, that when we cut the crural artery in a dead body, the two ends separate from each other for six lines; but when the same section is made upon the living body, the separation is more than an inch. This difference arises from the elasticity acting in the first instance, while in the second there is a muscular action.

"3. The hemorrhages which take place after the operation of aneurism, arise from rupture of the artery under the ligature. This is caused by the tendency which the coats of the artery have to retract, when irritated by the ligature.

"4. In amputation, we tie the same arteries as in aneurism, and yet we never see bleeding after that operation, because the artery is allowed to retract, and consequently the ligature is harmless.

"5. To obtain this advantage in aneurism, we must place the diseased artery in the same condition as after amputation, which may be done, by dividing the vessel between the two ligatures; the two ends will then be allowed to separate from each other to the whole extent of their natural retraction.

"6. I believe that all the aneurisms situated without the trunk may be operated on. The operation should always be attempted in preference to amputation, for analogy and experience prove, that in every case the limb will receive sufficient blood for its nourishment.

"7. We are not always to expect, as has been asserted, that some time after an operation for aneurism, we shall find the collateral vessels above the ligature visibly enlarged, for the increase is not confined to one, two, or three arteries, but all the vessels which belong to the limb, great or small, are proportionably enlarged."

In his second Memoir, M. Maunoir says,

"My first essay upon the ligature of the arteries was a theoretical work, in which I endeavoured to prove the necessity of cutting across the artery. This Memoir, purely practical, is intended to confirm my doctrine."

He performed a set of experiments on a fox, which must have been highly interesting at the period this essay was first published, for he tied both carotids, the left axillary, and right crural. It would be quite superfluous in the present day, to give his description of the anastomosing vessels which carried on the circulation, for such experiments are now common. In all of these experiments, he cut across the artery, in order that it might retract, and no bleeding followed; but his proof was insufficient, as he did not in any case tie the artery with a single ligature, and leave it entire.

When we first read these two Memoirs, we were very much struck with the remarks in them, remarks which we do not find, even at the present day, in any of the French authors, and we

were inclined to give M. Maunoir great praise for having been as far advanced as the surgeons in this country in 1802. We find him stating questions of the greatest interest in the consideration of aneurism. There is apparently great originality in his account of the anastomoses of the great trunks, and in the idea of cutting the artery between the two ligatures. We imagined that he had at least the merit of proposing this as soon as Mr. Abernethy.

"For," says he, "while I was prosecuting my experiments on the division of the arteries in Geneva, Mr. Abernethy proposed their section between the ligatures, not with the intention of securing the success of the operation for aneurism, but to relieve a feeling of tension, which was experienced along the femoral artery of a patient, who had it for popliteal aneurism."

But from M. Maunoir quoting Mr. John Bell in several parts, we have referred to that author, and find what had escaped our recollection, that he had previously to the publication of M. Maunoir's paper, laid down many of the facts, which we had considered as originating with M. Maunoir. But though we cannot give M. Maunoir the merit of originality in many of his remarks, still he deserves the greatest praise, as being the first author on the continent who took that view of the treatment of diseased arteries, which has led to such improvements.

The idea most prevalent at present respecting the structure of arteries, is, that they are not muscular. It is not a question which our limits will permit us to enter upon; our conviction, however, is, that the artery does possess a power of contracting.

To the many facts which prove the muscularity of the artery, we shall add the following. We wished to inject the lacteals of the turtle, and attempted to do it upon the intestines of one which had been killed a few hours before. It was, with the greatest difficulty that we introduced a tube into the vessel, and we could hardly force on any of the mercury. We tried to inject the arteries, there was the same resistance, and the fluid which we pushed in was ejected with violence. When we attempted to fill the intestines with water, we could perceive all the muscular fibres in action, so that at this time we could not fill either the intestines, the arteries, or lymphatics. We allowed the parts to remain in water for twenty-four hours, and then we could fill both the lymphatics and the arteries with ease. Can we explain the difficulty in any other way, than by allowing that the arteries are muscular, and that in the turtle

the power exists some time after death? No one will deny that it was the muscularity of the intestine which prevented us from filling it, and why may we not suppose that the arteries possess the same powers? When the parts had been in water for twenty-four hours, life had become extinct, and then the injection passed into the several vessels. To this it may be objected that the turtle is a cold-blooded animal; but we only mention these facts, as additions to the proofs which Mr. Hunter and others have given of the muscularity of arteries.

M. Maunoir's proofs of the muscular contraction of the artery in a longitudinal direction, are not satisfactory; he gives the authority of Dubois, who says he saw longitudinal fibres in an aneurism of the popliteal artery. But surely the parts are then too much changed for such observations, and in the cases which he brings from Guerin and Chopart, of muscular retraction, ulceration had taken place, which would sufficiently account for the distance there was between the ends of the artery.

M. Maunoir does not mention in what position the fox's head was, when he cut across the carotid; if the head were hanging down it would be a sufficient cause for the artery, when cut across, to retract to the distance it did. We do not deny that there is a great degree of retraction in the ends of the artery, when cut across, but we do not see that there are here any arguments to destroy the opinion of Mr. Hunter, that there are no longitudinal fibres. The degree of retraction is sufficiently accounted for by elasticity, which is a consequence of the oblique intertexture of the tendinous coat.

In his third proposition he assumes the occurrence of this longitudinal muscular contraction, and says it is the cause of the rupture of the artery upon the ligature, and to avoid this, he proposes to cut the artery across. But this is not a new proposal, it was performed by the ancients, and it has been done in this country. Mr. Abernethy did it to relieve a feeling of tension; Mr. John Bell to allow the artery to shrink and bury itself, and other surgeons have done it for different reasons. The plan has been successful, but the operations in which it has been omitted have been equally so, and we believe that it is now given up by the greater number of surgeons.

M. Maunoir asks why is there never hemorrhage after amputation, and his answer corresponds with his theory, that after the operation the longitudinal fibres are allowed to contract freely, and consequently no longer pull upon the inner unelastic coat.

It is curious that neither Mr. John Bell nor M. Maunoir appear to have conceived that there was any difference between the state of an artery after amputation, and after the operation for aneurism.

But we have been taught that a great difference does exist. There is no call upon the artery to propel its blood forward, when the limb is removed by amputation; while after the operation of aneurism, that portion of the limb below the ligature, not only requires blood, but has a power of exciting the trunk which supplies it, and consequently it is a cause of excitement to the continuance of the full activity of the vessel. We know also that if the ligature be applied near to a large trunk, the current of blood will continue to pass through that branch, prevent the clot forming, keep up an excitement and activity in the trunk, and consequently endanger its bursting under the ligature. We know, by dissection, that the contrary of all this takes place on amputation. All the branches of a stump are diminished, in a few days, and we see, even at the first dressing of the stump, that the activity of the trunk is much lessened.

We find, in the Discourses on Wounds, by Mr. John Bell, nearly the same opinions as are expressed in the two last propositions of M. Maunoir, for he says,

"I feel myself entitled to set up, at the conclusion of this discourse, a rule, the very reverse of that with which it began, and to say that after these proofs, the questions about inosculations may be blotted out altogether; that wounds of the axillary artery, like wounds of the femoral artery, are often dangerous, from bleeding, but never fatal from the want of inosculation; that we should tie the greatest arteries confidently, whenever they are wounded, without the trunk of the body, and that we should tie the arteries as boldly at the groin, or in the axilla, as in the lesser branches going down the thigh or arm."

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Our next paper is from M. Beclard, who must be considered, by all who have had the pleasure of knowing him, as one of the most rising surgeons in Paris. The present essay is full of ingenious experiments, and it displays, at the same time, extensive knowledge and accurate acquaintance with the authors who have written upon wounds of the arteries. From the description which he gives of the coats of the arteries, he appears to oppose the idea that the arteries possess muscularity, but he says M. Orfila has found a large proportion of fibrin in the coats, a fact which had been denied by Berzelius and Young.

After having given a short account of the opinions which had been held, at different periods, on the closing of an artery after a wound, he proceeds to detail his experiments.

He introduces them by observing, "I have made all the following experiments upon dogs, their arteries do not differ much from those of man, but the impulse of the heart is not so strong, and the blood is more coagulable."

In his first experiment, he pricked the femoral artery with a needle, the blood flowed, but soon stopped. On removing the coagulum it again flowed, but in a smaller stream; it gradually ceased to bleed, and finally stopped, though the coagulum was again scraped off. On examination of the artery no trace of the cicatrix was found. Several similar experiments had the same result. In experiment 4, he denuded the femoral artery, and made a longitudinal cut in it, from two to three lines. The lips of the wound were seen in contact during the diastole of the ventricle, and separated by a jet of blood during the systole. The blood was stopped by a coagulum, this was removed twice, and each time the blood flowed in a diminished stream, but the animal died. In experiment 6, he made the same incision, but did not detach the sheath from the artery, and the wound was left to nature.

"The hemorrhage was not great, there was an infiltration of blood into the sheath, the size of an almond, which, at the end of some days began to diminish, and disappeared in two or three weeks; on the limb being examined, fifteen days afterwards, a little white ridge was found adhering firmly to the artery, and to the sheath, and completely closing the wound. In the interior there was a depressed linear cicatrix of the breadth of the fifth of a line. The canal was regular, and pervious through its whole extent."

In experiments 7, 8, 9, he made transverse incisions of one-fourth, one-half, and three-fourths of the circumference of the femoral artery, separated from its sheath; all the animals died. In experiment 10, he made a transverse incision through one-fourth of the circumference, without disturbing the sheath. The bleeding was stopped by a coagulum, but on the animal moving, it again flowed, and the dog died. But in the next experiment of the same kind the blood was stopped by a coagulum, and the artery was closed by nearly the same process as in the 6th experiment: "So complete was the cure, at the end of six weeks, that the external part of the artery did not shew any mark of a wound, and the cicatrix was scarcely observable on the interior surface." In his 12th experiment he cut one-half of the circumference, the animal died, and so did it in several similar experiments. In experiment 13, he cut three-fourths of the circumference; after the animal was much

reduced the bleeding ceased, and the artery was closed in the same manner that it is when the section is complete.

Upon these experiments he concludes, wounds of the arteries of dogs are cured by nature, when they are only occasioned by a puncture or a longitudinal incision, whether the artery be denuded or not; but when arising from transverse incisions they are always mortal, if the artery be laid bare. If the artery retain its sheath, and the wound be one-fourth, or three-fourths of the circumference, it may be cured by the efforts of nature, but it is always fatal if only one-half be cut through.

The artery of a man when punctured, may probably be cured by nature, and when there is only a longitudinal incision the same process may take place; but when there is a transverse wound the artery never cicatrizes properly. The clot will be detached, and if a cicatrix be formed it will be distended and torn so as to permit the escape of blood, and consecutive aneurism offers so little chance of preserving the artery, that we must not trust to that resource.

The next part of his paper contains a set of experiments which he says were made before those of Dr. Jones were published; from these he concludes, that when an artery is deprived of its sheath for an extent greater than its distance of retraction, the hemorrhage is mortal. His explanation of the manner in which an artery is obliterated after the application of the ligature, is nearly the same as that of Petit.

The question, of why does the flow of blood stop in an artery which has been injured, and where no ligature has been applied, has excited considerable attention in this country; and although much has been written, and many experiments have been made, we find that we come nearly to the same rules which are given by Galen in *De Curandi Ratione per Venæ Sectionem,* for there he advises that the artery should be pulled out with a hook and twisted, but if that be not sufficient, it is to be cut across, or, says he, what is still better, *tie it.*

In all the speculations on the circulation, there has been one important point forgotten,—that the internal coat of the artery and the blood have a certain relation to each other, which preserves the blood fluid, and prevents coagulation. Any experiments upon the force of the heart in propelling the blood through tubes, will necessarily be erroneous.

May we not suppose that there is some truth in the following opinion; that by injuring the artery, the peculiar property of the internal coat is destroyed, and by this means the blood coagulates, and is attracted to the sides of the vessels. The author

of this idea contends, that coagulation and attraction, are simultaneous changes which the blood undergoes in parting with its principle of fluidity; this he considers to be the natural process of interruption to the flow of blood from a wounded vessel.

We hope we shall have another opportunity of referring to the experiments of M. Beclard. We find in some remarks which he makes upon Mr. Cooper's operation of tying the aorta, that he has tried various animal and vegetable productions as ligatures; and that they all produced irritation and consequent abscess. Any applications of this kind will, we are afraid, share the same fate as the cutting of the internal coat, and the *presse-artères,* unless we follow the plan of a learned professor in Dublin, who proposes to apply leaden ligatures, which he affirms will lay as quiet as musket balls.

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The last of the works which are prefixed to this article, is from the pen of the venerable Scarpa, who while enjoying the "otium cum dignitate," in his delightful retreat, occasionally gives another proof that his devotion to science, and his zeal for its improvement, are as unabated as when directing the school of Pavia.

Having from early life directed his vigorous and penetrating mind to the study of Anatomy and Surgery, he is eminently qualified to be an authority; and there is no author, whom, generally speaking, we would more willingly follow; for his works, in every point of view interesting, are founded on extensive experience; still we perceive objections to the deductions which he has drawn from his experiments, and doubt the propriety of applying them to the operation for aneurism.

The present Memoir consists chiefly in a relation of experiments upon the arteries of animals, the object of which is to shew the effect of the flat ligature, and to prove the possibility of obliterating the artery by applying the ligature only for a short time. With this, there is a supplement to his book on aneurism, and principally to Chapters V. IX. X. XI. XII.; but at present we shall confine ourselves to the Memoir.

Scarpa remarks, that the success of the operation for aneurism depends much on the simple manner in which it is performed, and on the precautions with which the ligature is applied. With this general position we cordially agree, but though

we allow that Scarpa has done much to simplify the operation, as performed on the continent, we cannot help thinking that his proposed operation is much too complicated.

It is not necessary to detail his experiments, for similar ones have been frequently made in this country. In his first experiment on sheep, he found that the carotid which had been compressed by a piece of plaster under a ligature, was on the fourth day as completely closed as one which had been surrounded by a simple ligature, but its coats were quite entire, while that on which the ligature only was applied, was going rapidly into ulceration. His next series of experiments are intended to shew, that after three or four days the ligature may be removed, and the artery be sufficiently closed. In support of the theory which he wishes to establish, he gives four cases of aneurism. Two cases were operated on by Paletta, according to the plan of Scarpa; the ligatures were removed on the fourth day, and the patients did well. The same success attended a case operated on by Birachi; and in a wound of the humeral artery, Molina and Fenini were equally successful.

These cases carry great weight. This question has been already much agitated in England, and at one time many surgeons concluded, from their experiments on brutes, that the momentary application of a ligature was sufficient. But in the course of last winter, cases occurred which, we believe, have shewn the danger of doctrines deduced from experiments on the arteries of animals.

We shall further remark on these experiments, that the application of a single ligature on the artery, has been very successful in this country, and that it is not possible to put a cylinder of plaster upon an artery, and to surround it with a ligature, without detaching the vessel too much from its connexions, for by this attempt to gain one advantage we lose another, and one which all good surgeons must think important,—the support of the artery by the vasa vasorum.

To the second part of the Memoir we must strongly object, for in order to be enabled to cut off the ligature, we must lose all the advantage of the chance of adhesion by the first intention, and it cannot be denied, that in attempting to remove the ligature, there must be great danger of wounding the artery, or of rupturing its coats, become tender by inflammation. We may add, that in this country the operation has been very successful, when the artery, not too much separated from the surrounding parts, has been tied with a single ligature.

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THIS article has so far exceeded our limits, that we may perhaps be considered as trespassing on the indulgence of our readers, in offering them the following extracts relating to Scarpa, from our common-place book.

Having left the town of Stradella, in Piedmont, about five in the morning, of the 9th of August, 1816, we arrived at the country residence of Scarpa, close to the village of Bosnasco, about six. In the course of half an hour we were introduced to Professor Scarpa. His manner struck us, as we entered, as being somewhat proud and distant; but the moment that he understood we spoke French, for at that time we were entering Italy, and knew too little of its language to converse in it with rapidity, he addressed us with much politeness, and as soon as we had sat down, he began a conversation with us, and with our friend Dr. Corneliani, on a multitude of the most interesting subjects connected with the profession of surgery.

He inquired whether our studies were directed principally towards surgery. On our answering that they were, he expressed much satisfaction, and observed that medicine was a thing which he himself did not like to meddle with. "But you have no need to come out of England," he went on to say, "to see good surgery. The English are already profound in that science.

Having noticed that he understood we had been inquiring for his writings in Pavia, he told us that he meant to publish an appendix to his work on Aneurism, chiefly for the purpose of relating some recent experiments which he had made, with a view to ascertain the time during which the ligature must remain upon an artery, in order to produce its perfect closure. He said that he still continued to recommend a cylinder of waxed linen to be placed between the artery and the ligature, and that he had never once met with a secondary hemorrhagy since he began to employ this contrivance. He always made use of two ligatures, but in a manner, he said, which had none of the dangers of the *ligature d'attente.* During the operation he was very cautious to separate the artery from the surrounding cellular substance, to an exceedingly small extent, and having thus introduced the two ligatures under the artery, he tied one of them over the cylinder of linen, leaving the other not tied. In order to ascertain the time necessary for the complete closure of the artery, he had lately made repeated experiments on the sheep, the dog, and the cow. He had found that the carotid artery of the sheep was completely obliterated, and a considerable thrombus formed on the side of

the obliteration nearer the heart, proving the completeness of the obliteration, at the end of four days; that is to say, he had removed the ligature on the fourth day, and having killed the animal some days after, he found the artery in the state he had just now mentioned.

In the dog, the artery was completely closed, by means of a ligature, which was removed on the third day. He remarked, that the dog was an animal of a greater degree of vitality than the sheep. His experiments on the cow had been followed by similar results; so that he had been led to conclude, that in the human subject the ligature might with safety, and with success to the operation, be removed on the fourth day. He would not however remove, he said, both the ligatures at that time. He would leave the one which had not been tied, in order that if the pulsation returned in the tumour, the artery might again be tied, without any second operation. He then stated, at some length, the advantages of this early removal of the ligature over the present plan of leaving it perhaps fourteen days, insisting chiefly on the almost certain avoidance of secondary hemorrhagy, on the avoidance of a tedious suppuration in the wound, and occasionally of a troublesome sinus.

He said, that he considered this improvement in the operation for Aneurism, as more valuable than all the *bagatelles*, as he was pleased to call them, which he had ever made; and he mentioned, that he had written to a number of his friends an account of the above experiments, with a view to induce them to try this method in their operations. He repeatedly urged us to communicate these facts to our friends in England, for the same purpose. I do not operate myself now, said Scarpa; indeed my sight does not permit me to do much of any kind without spectacles. But you see, said he, with much good humour, that I am here pursuing agriculture. In the course of the conversation, we mentioned that we had seen Assalini in England, and that we understood he had invented an instrument for the compression of the artery in the cure of Aneurism. He replied that Assalini was a pupil of his, that he had a mania for instruments, but that it was proved also, by the trials of Assalini, that the plan of treatment which he had explained to us was almost certain to succeed; as after compression for four days, by means of Assalini's forceps, a patient had been cured of a popliteal Aneurism, under the care of the late Monteggia at Milan.

During this part of our conversation, Professor Moriggi entered, being at that time on a visit to Scarpa. Scarpa introduced

us to Moriggi, as to his successor*, and lamented that we had not come to Pavia during the Clinical course, when we should have seen Moriggi operate, in the manner in which operations ought to be done. Moriggi, who seemed a man about the same age as Scarpa, answered this by some playful remark; and Scarpa went on to ask, whether we had seen the anatomical museum of the university of Pavia. We told him that we had. He said that it appeared small, when compared to the museums of the Hunters; but he could assure us that it contained every thing necessary for the illustration of the lectures on Anatomy. He would allow us to demand of him any thing we pleased, even in minute anatomy; he was certain it was demonstrated in the preparations of the museum. Cuvier, when at Pavia, he added, had been struck with this seeming gasconade; but was still more surprised to find, on putting inquiries to Scarpa, upon the anatomy of the eye, that it was fact. Scarpa seemed well acquainted with the anatomical museums of the Hunters. In that of William, he said, there were perhaps forty injections of the arteries of the arm, not one of them shewing any thing more than the common distribution of these vessels. There were perhaps twenty bottles filled with preparations of the villous coat of the intestines. He proceeded to make some inquiries respecting the fate of the Hunterian museums. We stated to him, that that of William was now at Glasgow; and that that of John had been purchased by the English government; and that Messrs. Abernethy and Lawrence gave lectures, the one on Surgery, and the other on Comparative Anatomy, chiefly with the view of illustrating the preparations of the museum.

The name of Mr. Lawrence led us to speak of Hernia. We asked Scarpa if he had seen Mr. Lawrence's book upon that subject. He said he had; and he then bestowed upon that work a very strong encomium We then asked him if he had seen the work of Mr. Astley Cooper, upon the same subject. He said he never had, so that if there were any coincidences between Mr. Cooper's work and his own, they were altogether incidental. He had written to England, he added, for Mr. Cooper's work, but had received for answer that a new edition was in the press. He proceeded to remark, that Mr. Wishart of Edinburgh, who had translated his work on Hernia, had expressed, both in a note in his translation, and also in a letter to himself, sentiments of greater satisfaction, in the simple account which he had given of the anatomy of the parts concerned in Hernia, than in the elabo-

* Moriggi has since resigned, and has been succeeded in the chair of Clinical Surgery by Dr. Volpi.

rate descriptions of the English anatomists. We said, that as to the anatomy of the fasciæ concerned in Hernia, there was an account of them in the work of Mr. Lawrence. He had observed it; but for these fasciæ, he added, I must confess that I do not understand them. He then agreed with us in the observation, that a knowledge of the fasciæ could not be of very considerable use during an operation, as the natural state of the parts was always much changed by the existence of a Hernia. We took this opportunity of mentioning to him the name of Mr. Allan Burns. He understood that we had an excellent work upon the Diseases of the Heart, by a gentleman of that name, but he had not heard of his book upon the Surgical Anatomy of the Head and Neck, nor of his Observations upon the Anatomy of the Parts concerned in Hernia.

He entered next at some length into the merits of Baynton's treatment of ulcers, and instituted a comparison between this treatment and that of Underwood. Volpi's name was mentioned as a supporter of Underwood's practice, in preference to that of Baynton. Scarpa himself was the first to introduce Baynton's practice into Italy. Before this conversation, we had seen it employed, with great precision, in the hospital of Pavia.

He next mentioned to us that he was about to publish a new edition of his work upon the Diseases of the Eye. He had made no additions, he said, to any of the last three editions, so that having before him the notes and observations of eighteen years, he would be enabled to render the work much more complete. Here he took occasion to mention the work of Mr. Wardrop, upon Fungus Hæmatodes, and the same gentleman's observations upon the Evacuation of the Aqueous Humour in Ophthalmia, as having given him much satisfaction in the perusal. He added, that he had already requested Professor Moriggi to make trial of the evacuation of the aqueous humour. We asked him if he had seen the work of Mr. Saunders, on the Diseases of the Eye. He said he had not, but that he had understood that he was the author of a new operation for cataract in children.

Drs. Moriggi and Corneliani having left us, Scarpa took the opportunity of mentioning the former with much respect as an operator, and particularly as a lithotomist. He said he employed Frère Cosme's lithotome, but so improved, that after the incision into the bladder was finished, a director was left for the introduction of the forceps. We stated to him, that the common instrument at present among the younger surgeons of England, was the scalpel. He observed, that it was a matter of very little consequence what instrument was used; a good surgeon generally operated well with the instrument to

which he was accustomed; and even though it were evidently inferior, he continued to use it in preference to any which might be proposed. "I have said to the students in the dissecting room," he added, "that I could perform lithotomy with a common pocket-knife, if it were sharp enough. If a surgeon knows well the anatomy of the parts, he can never be at a loss for an instrument."

We made a short walk round his house. He seemed pleased in shewing us his wine-press, his vines, the young fig-trees which he himself had planted, and the view of the vast plains of Lombardy. He pointed out to us Pavia, and told us that with a glass he could see Milan. Looking round with complacency on his fields, all this, said he with a smile, is the work of surgery.

He began to tell us who had been his fellow-students in London. He mentioned Pott, Sheldon, the Hunters, and Cruikshank, as having been his friends, and particularly the last, as having been one with whom he had been intimate, and with whom he had laboured much in anatomical studies *. He believed that the only one remaining alive, of those whom he knew, when in England, was the author of the Flora Britannica, Sir James Edward Smith. He then proceeded to bestow much praise upon the manner in which surgery was studied in England. In Italy, he said, the young men expected to be surgeons in four-and-twenty hours; and their studies failed, from want of regularity, precision, and perseverance.

This conversation lasted for two hours. Scarpa thanked us again and again for our visit. He has been an elegant man in his appearance, and still preserves a dignified and gentlemanly look. We have seldom been more highly pleased, in every respect, than we were with the reception we received from this celebrated man.

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## Art. III. *Sketches of the Medical School of Vienna.*

"Id quidem infinitum est in hac Urbe."
Cicero, de Finibus. *Lib. V.*

### THE UNIVERSITY.

There are two German Universities in the Austrian Empire, Vienna and Prague; and five Lyceums, Lemberg, Graetz,

* One of the engravings in Scarpa's *Annotationes,* we observe, has been executed in London, by C. Knight.

Olmutz, Klagenfurt, and Linz. The difference between the Universities and the Lyceums, so far as concerns medical study, is that surgery alone is taught in the latter, both medicine and surgery in the former.

The Emperor Frederic II. as appears from a work which he composed, and which bears for title, "*De Arte Venandi cum Avibus*," had himself made numerous observations in Comparative Anatomy*. He is quoted as an authority by Professor Blumenbach. Frederic is entitled to the everlasting gratitude of mankind, for the exertions which he made in opposing the superstitions and the prejudices, which during the thirteenth century, pressed down into the dust, knowledge of almost every kind, especially medical knowledge. He got Galen translated, gave orders that every year in Palermo, a human body should be dissected, and commanded that no man should be permitted to practise surgery who had not studied anatomy on the human subject. It was in the year 1237, that he granted leave to the Senate of Vienna to establish a University.

This institution was considerably improved by Albert I. in 1296. Ottokar of Bohemia added to the number of teachers, and augmented their incomes. Under Albert II. the University of Vienna flourished still more: he too added to the number of professors, and granted them public *auditoria* and free dwellings in the Imperial Castle. Duke Rudolph IV. in 1364, removed the academical *auditoria*, and the dwellings of the professors to the *Minoriten*-Cloister, and to the houses of the former Knight-Templars, as these were more still and retired. In 1365, Pope Urban V. issued a bull of ratification for the juridical, medical, and philosophical faculties of the University. On the solicitation of the Duke Albert III. the theological faculty was added by Urban VI. In 1366, this University was arranged anew, after the model of that of Paris, and students were now admitted from the Austrian, Rhenish, Saxon, and Bohemian nations. Under Albert III. in 1388, the number of professors rose to thirty, and considerable additions were made to the accommodations of the University. Ferdinand II. in 1622, gave over this institution into the hands of the Jesuits, who, though they were themselves shut out from the professorships, yet knew how to retain the whole government of the University till the year 1754, when the learned and enlightened commentator on Boerhaave, Gerard Baron Van Swieten, succeeded, against much opposition, in introducing very important

* The best edition of the above-mentioned work, is that of Professor Schneider, printed at Leipzig in 1788, in two volumes quarto.

improvements. He new-modelled the whole medical faculty, and arranged it in a manner much more likely to answer its professed object than it had hitherto done. He introduced professorships of chemistry and of botany; and the establishment of a botanical garden, and of a complete collection of chemical and surgical instruments, was wholly owing to him. He also brought forward a proposal for a professorship of midwifery. He drew the most celebrated men of all classes to Vienna, assuring them of adequate salaries. The University of Vienna is at present the richest in all Germany. Under the reigns of Maria Theresa, Joseph II., Leopold II., and the present Emperor, it has so risen in reputation amongst the Catholic Universities, that it now occupies, especially as a medical school, the very first rank.

The buildings of the University of Vienna are situated in the town, which is small, and is separated by a wide *esplanade* from the suburbs, in one of which is the *Allgemeine Krankenhaus*, or General Hospital. The hours of lecturing in the University interfere with those of the visits in the Hospital. Hence the lectures are but rarely attended by those foreigners who visit Vienna in pursuit of their medical studies; amongst whom are found students not only from the western and northern countries of Germany, but from Hungary, Swisserland, Italy, Russia, Denmark, Holland, and even France and England, and with them many who have already practised medicine, and occasionally professors from distant Universities. It is chiefly from the admirable arrangements of the clinics for internal diseases, for diseases of the eye, and for lying-in women, and from the celebrity of the professors of these three clinics, that foreign students are attracted to Vienna.

In order to be admitted a student of medicine in an Austrian University, it is necessary that the candidate should lay before the Director of Medical Study, certificates of his having studied philosophy for three years in a Lyceum. Under philosophy are comprehended the Latin and Greek languages, History, Mathematics, Natural and Moral Philosophy, and Religion. The school-year in Vienna begins with November, and ends with August. The course of medical study extends to five years, and comprehends the following lectures:

First year: 1. Introduction to Medico-Chirurgical Study, and Natural History, by Professor Von Scherer. 2. Anatomy, by Professor Mayer. 3. Botany, by Professor Joseph Von Jacquin.

Second year: 1. Physiology, by Professor Prochaska. 2. General Chemistry, by Professor Joseph Von Jacquin.

Third year: 1. General Pathology and Therapeutics, by Professor Hartmann. 2. Midwifery, by Professor Boer. 3. Materia Medica et Chirurgica, by Professor Hartmann. 4. General and Special Pathology of External Diseases, by Professor Von Rudtorffer. 5. Ophthalmology, by Professor Prochaska. 6. Demonstration of Surgical Instruments and Bandages, by Professor Von Rudtorffer.

Fourth year: 1. Special Therapeutics of Internal Diseases, by Professor Von Hildenbrand *. 2. Clinic for Internal Diseases, by Professor Von Hildenbrand. 3. Veterinary Medicine, by the Director of the Veterinary School.

Fifth year: 1. Special Therapeutics of Internal Diseases, by Professor Von Hildenbrand. 2. Clinic for Internal Diseases, by Professor Von Hildenbrand. 3. Medical Jurisprudence, by Professor Bernt. 4. Medical Police, by Professor Bernt.

The students of medicine, a class who in Vienna are strictly distinguished from the students of surgery, are not obliged to attend the following lectures:

1. Practical Surgery, by Professor Kern. 2. Practical Ophthalmology, by Professor Beer. 3. General Pathology, Therapeutics, and Materia Medica, by Professor Herrmann. 4. Special Therapeutics of Internal Diseases, by Professor Raimann.

Such are the ordinary lectures on medicine in the University of Vienna. Those indeed of Professors Von Hildenbrand, Kern, Beer, and Raimann, are delivered in the General Hospital. For none of the above lectures is any fee paid by those who are enrolled as students in the University. The expence of enrollment is fifteen paper-guldens half-yearly, which at the present depreciated state of the Austrian paper-money, is about nine shillings. For the lectures and clinic of Professor Beer, strangers pay twenty-five paper-guldens yearly. The lectures of Professors Herrmann and Raimann are designed for candidates in surgery, and are seldom attended by students of medicine.

The following are accounted extraordinary lectures:

1. Diseases of Women and Children, by Professor Boer. 2. Philosophical and Physical Knowledge necessary for Surgeons, by Professor Pissling. 3. Duties of those who attend the Sick, by Professor Schmidt.

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* Since this Article was prepared for the press, we have received intelligence of the death of this celebrated physician. We trust, in an early number, to present our readers with memoirs of his life and writings.

For these lectures a small fee is paid. Those of Professor Schmidt are delivered on the Sunday evenings.

The lectures of Professor Prochaska on Physiology, and of Professors Hartmann and Von Hildenbrand, are given in Latin: the others in German.

The students of practical anatomy carry on their dissections in the University. To foreigners, subjects are supplied at the price of seven paper-guldens. They are brought from the General Hospital, but are not so plentiful as in the dissecting rooms of Paris. All dissection in the General Hospital is at present strictly forbidden; but it is not unfrequent to obtain leave to dissect in the Military Hospital, which is closely adjoining to the General one, whence the dead bodies are furnished.

Besides the public lectures, several of the professors in the University of Vienna give occasional *Privatissma*. By the special order of government, foreigners only are allowed to take advantage of these private courses. Professor Mayer gives private demonstrations on anatomy in this way, or in any particular part of anatomy which is desired. Professor Von Rudtorffer gives over the *privatissma* on bandages and surgical instruments, to his assistant. Professor Kern usually does the same in regard to surgical operations. The assistant also in the obstetrical clinic gives *privatissma*. Professor Beer and his assistant, Dr. Rosas, give similar courses on the operative surgery of the eye. The number of students admitted to a *privatissmum* is generally six.

In all the public courses of medicine and surgery, an examination of the enrolled students is held by the several professors every half-year, in presence of one or more of the other office-bearers of the University. In order to be admitted to examination for a degree in medicine, the candidate must produce certificates of having acquitted himself respectably in three semestral examinations, of having completed his fifth year of study, and of having publicly treated within the last half-year two patients in the clinic for internal diseases, the cases of which patients he must at the same time present to the faculty, written in Latin.

He who aspires to the degree of *Magister Chirurgiæ*, a rank analagous to that of member of one of our Colleges, is obliged to follow nearly the same course of study as the candidate for a degree in medicine. It is different in regard to the common civil- and country-surgeons, as they are called. These study only two years, and so far from being required, are

scarcely admitted to attend the lectures and clinic of Professor Von Hildenbrand, or the lectures in Latin of Professors Prochaska and Hartmann. Neither in Austria, nor so far as we have seen, in any part of Germany, is this class of surgeons respectable. They are inferior to the *officiers de santé* of France, still retain the helmet of Mambrino, and execute at once the duties of barbers and surgeons.

One of the public examinations for the degree of master in surgery consists in the performance of two operations on the dead body. The operations are determined by lot. The candidate describes the surgical anatomy of the parts, lays down the indications for the operations, performs them upon the dead body which is before him, and applies the proper bandages.

Degrees are granted by the University of Vienna in Ophthalmology. Doctors in medicine and Masters in surgery are considered as having taken this degree; but no one else can publicly practice as an oculist in the Austrian States, who has not attended the lectures of Professor Prochaska, and undergone an examination by him on the diseases of the eye.

The marked distinction of students of medicine from students of surgery, the severe course of study to which the former are subjected, the neglectful and almost contemptful education of the *inferior* order of surgeons, and the uncommon opportunities for studying diseases of the eye, especially under men of such reputation as Prochaska and Beer, are prominent points in the Medical School of Vienna, so far as the University is concerned. The state of the profession throughout Austria corresponds exactly with the provisions made by the government for medical and surgical education. The physicians are distinguished for their extensive and practical knowledge. Surgery on the other hand seems to languish; and we had not been long in Austria before we saw the full force of a remark, which was made to us by the celebrated Soemmering, when we visited him at Munich, namely, that luckily in England, surgery was studied by gentlemen. As for what the Germans have termed Ophthalmology; the science of Prochaska, the enthusiasm, the profoundness, and the amazing dexterity of Beer, have contributed to render this one of the favourite studies, both of those destined to practise surgery, and of those who aim at the *summi honores medicinæ*.

## MEDICAL JURISPRUDENCE.

Honour, liberty, and life, in so far as they depend upon medico-judiciary reports and inspections, are not made the sport of ignorance and carelessness in Austria. Medical Ju-

risprudence forms an indispensable part of study in the University of Vienna; and certain extraordinary means of promoting an accurate knowledge of this branch of medical science have been adopted by the government, and are well worthy of imitation. These consist in the publication of a code of regulations, by which all medico-judiciary inspections are to be conducted throughout the empire, and reports to be drawn up; and in the performance of inspections publicly, upon the dead bodies which are found in suspicious circumstances, and which not being at first recognised are carried to the dead-room of the General Hospital. Due notice is given to the students at what hour such inspections are to take place, and they have thus an opportunity of seeing those regulations put in practice, which they themselves will one day be called to fulfil.

We may here notice that after every death in the Austrian dominions, the physician or surgeon who attended is required to sign a paper, certifying the disease, and whether it were contagious. If it was contagious, the law obliges the relatives to have all the bed-clothes fumigated. In Vienna there is an establishment for this purpose, where on paying a small sum, the fumigation is properly performed.

### MUSEUM OF PROFESSOR PROCHASKA.

There are several anatomical museums contained in the University. That of Professor Prochaska is the only one which excites any peculiar interest.

There is a primitive simplicity, a condescension, and a gentleness in this old man, so celebrated at the same time for his genius and his learning, which endear him to every one. We had no sooner announced to Professor Prochaska the object of our visit, than he put into our hands a foot, which, at first sight, had nothing of an uncommon appearance, except that its surface was of a deep vermillion colour. One might have supposed that it had been roughly coloured, and varnished with a brush. He then gave us a small microscope, and desired us to examine the foot in a good light. We had no sooner approached to the window, and looked at the foot through the microscope, than we discovered that its cutaneous vessels were beyond conception minutely injected. The vermillion colour of the preparation arose from the injection filling on every point of the surface of the cutis, one might almost say a myriad of arteries.

In a second preparation we saw the periosteum of the femur almost equally minutely injected. This preparation seemed to prove the non-vascularity of cartilage, for as soon as the injected vessels of the periosteum reached the border of the articulating

surface of the knee, they were most distinctly seen to return upon themselves, and not one could be discovered, even with the aid of the microscope, to be prolonged into the cartilage, which had retained its white, or rather assumed from desiccation, a yellowish colour. Professor Prochaska has never been able to inject any of the cartilages. He is therefore inclined to believe that the patella which Ruysch has described, the internal cartilaginous surface of which exhibited a considerable number of vessels, must have been diseased.

Professor Prochaska next shewed us a small box of similar Lieberkuehnian preparations, which had cost him, he said, nearly ten years. These consisted of injected and prepared membranes, and of thin sections of other organs, fixed upon plates of glass in the same way that other microscopical objects usually are. When viewed through the microscope, and especially those of the kidney, these preparations displayed a minuteness, a beauty, and a variety, which even far exceeded our expectations. Indeed we can conceive nothing in this kind of preparations more beautiful than one of those of which we now speak, in which we saw the capillaries of the cortical part of the kidney, forming on each side of their trunks those little globules, which both Malpighi and Mascagni supposed to be hollow glands, in which the urine was deposited immediately after being secreted.

We accompanied Professor Prochaska from his house to his museum. Here we found whole heads and extremities injected microscopically. He told us that he had injected even whole subjects in that way. He shewed us a series of preparations, in which the periosteum, the peritonæum, the mucous membrane of the nose, and that of the intestines could be compared. It is from the redness which a part assumes, when well-injected, that Professor Prochaska estimates its vascularity. Some parts, such as the nails, hair, epidermis, cartilages, and arachnoid membrane, never admit injection. Other parts which exhibit scarcely any vessels immediately after injection, become extremely red on being dried; displaying, when viewed through the microscope, a tissue of innumerable arteries. Such is the case with the internal surface of the cutis, with the nerves, and with the salivary glands.

We were surprised, when formerly at Paris, to hear the antiquated term of *parenchyma*, employed by some of the best anatomists, and used, not as a mere convenient denomination for a set of organs the nature of which is but imperfectly understood, but as a name really indicative of the texture of the viscera in question. Professor Prochaska, while on the one hand he altogether rejects

the doctrine of a *parenchyma*, has been led from his injections to reject equally the opinion of Ruysch, and he thinks that Ruysch had been led to believe that every solid animal substance was composed of nothing else than vessels, not so much from the excellence as from a faultiness in his preparations.

The Ruyschian, or Lieberkuehnian art of injecting, is possessed by at least four living anatomists. Three of them have had communications between themselves upon the subject, and for aught we know, the fourth also; but none of the four has deigned to give the secret to the world. Yet medicine is a republic in which there ought to be a community of goods *.

Professor Prochaska has declined publishing any views taken from his microscopical preparations, on account of the great expence attending the minute and delicate engraving which they would require. When we were at Florence, Signor Serantoni, the draughtsman of Mascagni, shewed us the proofs of a series of engravings representing microscopical views of different parts of the body, with which that celebrated anatomist was occupied when he died. They were twenty engravings in number, and it was meant to print them as a *prodromus* to a complete collection of anatomical plates which Mascagni had wished to give to the public. We fear, however, that even the *prodromus* has not yet been published.

The museum of Professor Prochaska contains a number of interesting preparations besides the microscopical ones. We noticed particularly the following:

1. A luxation of the os humeri from external violence, in which the head, and about three inches of that bone, had been forced into the cavity of the thorax, between the third and fourth ribs. This portion of the os humeri had remained there for such a length of time before the patient's death, that nature had proceeded considerably in an attempt to remove it. The internal spongy substance of the head of the bone had been already removed by the absorbents, and a mere crust remained, which seemed to consist chiefly of the cartilage and periosteum.

2. The bones of a person who had been affected with general *mollities ossium*. All the vertebræ in this preparation were seen glued together into one mass in consequence of the disease, the sacrum was scarcely distinguishable, the ribs were bent in-

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* We learn that a few of Lieberkuehn's own injected preparations are on sale in Hamburgh, for the modest sum of £450! There is perhaps less secret in his art than is generally imagined. We have even seen some turpentine and cinnabar injections, since our return from Germany, which if dried and submitted to the microscope, would probably equal those of Professor Prochaska.

wards, and marked by the impression of the arms, which the patient had kept sunk into his sides, and all the bones were extremely light.

3. The cranium of a young man of eighteen years of age, extraordinarily disfigured, from a polypus which had originated in the nose In the year 1786, this boy had been brought to Professor Prochaska in Prague, affected with amaurosis and protrusion of each eye from the orbit, the bones both above the orbits and on the sides of the nose being tumified, and the respiration through the nostrils difficult. These symptoms continued to the year 1791 without pain, and with little other inconvenience than the blindness. By degrees the eye-balls became more protruded; the tumefaction over the orbits, at the root of the nose, and in the whole upper jaw increased; the arch of the palate became swoln and projected into the cavity of the mouth; and towards the end of life a discharge of ichórous matter, with frequent and excessive hemorrhage, took place from the nostrils. In the September of that year, he died from suffocation. At the time of his death, the root of the nose, and each of the superior maxillary bones were so enlarged, that little more than the apex of the soft part of the nose could be seen. On dissection, the right nostril was found in its anterior part exceedingly dilated, the cartilaginous septum being pushed towards the left side. Posteriorly, both nostrils by the absorption of the septum had united into one ample cavity, which was occupied by a large tumour, remarkable for its numerous spongy excrescences, and which by its size and weight had produced much tumefaction of the arch of the palate. On opening the cranium, it was found that the anterior and middle lobes of the brain had assumed an unnatural ash-colour, and that at that part where the anterior lobes lie upon the ethmoid bone and orbitary processes of the frontal bone, the brain along with the durá mater were dissolved into a pulp of the same colour as the tumour of the nose, with which they were *actually in contact*. From the destruction of the substance of the brain in its inferior part, no nerve could be discovered from the olfactory to the auditory. The head being macerated, a heavy mass of tumour fell out from the base of the cranium and from the nose. This tumour, which contained nothing osseous, but was of a lardy and cartilaginous texture, penetrated by soft prolongations into the bony tumefactions which projected above the orbits, filling up all the interstices of the lamellæ, of which these tumefactions were formed, and emerging immediately under the integuments of the forehead. On examining the cranium as it is preserved in the museum of Professor Prochaska, we found that the orbitary

processes of the frontal bone, the ethmoid bone, the vomer, the turbinated bones, the little wings of the sphenoid bone, and its middle part, except the anterior clynoid processes, which adhered by osseous filaments to the remaining part of the sella Turcica, the anterior part of the occipital bone, and the apices of the petrous portions of the temporal bones as far as the carotid canals, were so completely consumed, that the vast cavity of the nostrils, along with that of the mouth, opened into the cavity of the cranium. Forth from the cranium also, as well into the orbits as into the supraorbitary tumefactions already described, there were many larger and smaller openings. The superior maxillary and nasal bones were much expanded, and so thinned away that they presented various gaps, opening into the cavity of the nostrils. The palatine processes of the superior maxillary bones had disappeared; the pterygoid process of the sphenoid bone, on the right side, had so receded in its superior part, that the spheno-palatine foramen much enlarged, opened into the zygomatic fossa; the left antrum Highmorianum had disappeared from compression, and the right opened backwards by a large hiatus.

4. The internal parts of generation, taken from a woman who had died of ascites. Each ovary gave origin to a large branchy tumour, not unlike in its ramifications to the fimbriated extremity of the Fallopian tubes, but more knotty, and still more strongly resembling in form a vegetable production.

5. Several acephali, in two of which, not only the head, but the superior extremities, and, in a great measure, the thorax, were wanting. When at Berlin, we had an opportunity of examining the collection of acephali in the Walterian Museum; and a series of preparations, illustrative of the origin of these monstrous fœtuses, was particularly pointed out to our attention by Professor Rudolphi. The first preparation of this series consisted of an ovum containing an embryon, in which the upper part of the head presented the appearance of a vesicle ready to burst. In the second, a similar vesicle had actually given way, and the remnants of the superior part of the cranium were floating in the liquor of the preparation. In the third, these floating remnants had partly disappeared. In the fourth, the fœtus was what is termed acephalous, a mere tubercle remaining in the situation of the head. The conclusion drawn from this series of preparations by Professor Rudolphi was, that acephalous foetuses were the results of hydrocephalus in the embryon.

## THE GENERAL HOSPITAL.

In the suburb of Vienna, called the *Alster Vorstadt*, are situated the General Hospital, the Josephine Academy, and the

great Military Hospital. Hence, in this suburb are lodged almost all the foreigners, as well as many of the students from the different parts of the Austrian dominions, who come to Vienna in pursuit of medical study.

The *Allgemeine Krankenhaus*, or General Hospital, is one of the noblest institutions of the patriot-Emperor Joseph II. It is one of the most extensive buildings in Vienna, and considerably the largest hospital which we have seen, even excluding the Lunatic and Foundling Hospitals, which are both situated near it, and are, in certain economical respects, connected with it. The greater part of the hospital is of two stories in height. It is arranged in seven large quadrangular courts, the first of which upon entering, and the largest, is laid out with grass-plots and shaded alleys; and contains, in a building separated from the rest of the hospital, the house of the director, the medical clinic, a lecture-room, and the museum of pathological anatomy. The physicians, surgeons, and assistants, have apartments in different parts of the hospital.

Like most of the hospitals in Germany, the *Allgemeine Krankenhaus* of Vienna is under the inspection of a medical director, who must reside within the walls of the hospital. This office was filled by Professor Von Hildenbrand; and is looked upon as one of great trust and high respectability. The whole economy of the institution is thus placed under the immediate and constant view of a stern, but, at the same time, liberal and well-informed inspector.

The number of sick-rooms is 111; of which 61 are for male, and 50 for female patients. These rooms are each 26 feet long, and 17 feet broad: they are lofty and clean. The windows are large, but are all raised eight feet from the floor. The advantages of being able, by this plan, to place beds near to the windows, and of avoiding the stream of air which blows upon the beds when the windows of an hospital are low, are perhaps over-balanced by the disadvantage of being unable readily and completely to ventilate the apartments. The beds are placed two feet and a half from each other. The bedsteads are of wood: they are without curtains. Square pieces of dark green cloth, hung from wooden supports in the form of the letter T, are occasionally used to supply the want of curtains: for instance, in moderating the light around a particular bed, or in concealing a patient, during the last moments, from the view of those who are laying around him. Though long accustomed to the daily view of hospital-wards where no substitute was employed for curtains, we confess ourselves favourable to their use, hav-

ing seen their great advantages in the Hôtel-Dieu of Paris, and in other hospitals. In beds without curtains, the patients are exposed to the eye of every stranger; whereas, when the contrary is the case, they may look upon themselves as in some measure at home; they can guard themselves from the cold of a large apartment, and are not forced to crowd around the fire-place; they can procure for themselves a certain degree of obscurity, favourable to repose; and conceal themselves from those by whom they are surrounded. The beds of the General Hospital are indifferent: the bed-coverings good. A few minutes before the visit of the physician or surgeon, a quantity of juniper wood is burned on a shovel carried round in each ward. We never observed this practice produce any irritation even in the patients affected with pulmonary complaints, and it completely removes the fœtor of a sick-room. The wards are heated by a large earthen stove placed in the centre of each.

The patients treated in the General Hospital, independently of the Lunatic and Foundling Hospitals, are arranged into five classes. Of these, lying-in women form one; the remaining four consist of patients affected with internal diseases, external diseases, diseases of the eye, and venereal diseases. To each of these five classes, different parts of the hospital are appropriated. The total number of beds is two thousand, and in the winter season this number is nearly filled up. The following are the numbers of patients treated during the years 1810, 1811, and 1812, in the General, Lunatic, and Foundling Hospitals.

| | Medical and Surgical. | Lunatic. | Lying-in. | Foundlings. | Total. |
|---|---|---|---|---|---|
| 1810 | 12,374 | 251 | 747 | 2,928 | 16,300 |
| 1811 | 11,709 | 512 | 1,115 | 2,843 | 16,179 |
| 1812 | 10,358 | 212 | 1,489 | 2,809 | 14,868 |

The average number yearly in the General Hospital alone, has, in the succeeding years, amounted to from 15,000 to 17,000.

Three classes of the patients of the General Hospital pay for their maintenance: the fourth, and, we believe, the most numerous class, are admitted gratuitously. The highest rate is eleven pence daily. Those who enter upon this rate have a separate room, particular attentions, and a very good bed; but they must provide themselves with sheets and washing. Forty separate rooms are appropriated for this class. The second rate is six pence daily: the patients of this class have no separate room, but, in other respects, are treated as the former. The third rate is, for the inhabitants of Vienna, two pence, and

for strangers, two pence half-penny, daily. However great and undeniable the advantages may be, of institutions in which those of small fortune may receive medical attendance on paying a moderate stipend, and thus the patrimony of the poor be preserved to the poor, yet the mixing of those who pay, and of those who are admitted gratuitously, in one hospital, nay, even in the same wards, by no means appears a proper arrangement. Neither are we friendly to those immense palaces, we had almost said little towns, which we meet with so frequently in Italy, and, occasionally, in Germany, under the name of hospitals. Whenever the number of patients in an hospital exceeds a few hundreds, the public may look for abuses and mismanagement.

The pharmacy of the General Hospital is an extensive and well-regulated establishment. The Pharmacopœia Austriaca, of 1814, is followed. The authors of that edition have had especial regard to the cheapness of the articles admitted. They have, for this reason, struck out many articles of foreign produce, such as, balsamus copaivæ, balsamus Peruvianus, cascarilla, cinnamomum orientale, nux moschata, quassia, sarsaparilla, scammonium, succinum, zingiber. The medical plants, for instance, aconite, are brought chiefly from the subalpine parts of Austria. For the sake of economy, in the commencement of the cure of intermittent fever, it is almost general in this hospital to prescribe a decoction of the root of the common taraxacum; and in cases of chancre, instead of the solid nitras argenti, a solution is employed, which is prepared by digesting for some days, in a warm room, a quantity of filed silver with nitric acid.

The physicians and surgeons have the titles of *Primar-Aerzte* and *Primar-Wundaerzte.* General-chirurgus Rust, who is now professor of clinical surgery at Berlin, lately occupied the place of a *Primar-Wundarzt*, in this hospital. Dr. Schiffner, the son-in-law of Professor Prochaska, is one of the *Primar-Aerzte* whose visits are most numerously attended.

## THE CLINICS.

There are five clinics in the *Allgemeine Krankenhaus*; two medical, a surgical, an ophthalmological, and an obstetrical. One of the medical clinics is designed for students of medicine, and the others for students of surgery.

## THE MEDICAL CLINIC.

The medical clinic, or Schola Practica, was united with the General Hospital in the year 1784. It consisted of twelve beds, and was under the care of Maximilian Stoll. In the year 1787,

he was succeeded by Reinlein, and in 1795, by John Peter Frank. It was especially under Frank that this institution flourished, and became much frequented by foreigners. The number of beds was increased to twenty-four, and an anatomico-pathological museum was established. In 1804, Frank went to Wilna, as a Russian state-counsellor, and thence to St. Petersburg. He was succeeded, for a short time, by Benth; and in 1806, by Von Hildenbrand, who, for thirteen years, had been professor of medicine in Krakau and Lemberg.

There can be nothing, we think, more certain than that to be really useful, a clinic must consist of a small number of patients. In a clinic, the patients are not to be merely seen, but to be observed; not to be observed by a man of experience merely, but their symptoms and treatment to be made the subjects of investigation by those who are yet unaccustomed to the practice of medicine. The clinical visit ought not to surpass the space of an hour. Now, in that space of time, it is impossible to visit more than twenty-four patients. Frank had rarely above eighteen in his clinic at Pavia.

Particular attention ought to be paid, in erecting an hospital, to have the clinical wards both more spacious and more lofty, in proportion to the number of patients which they are to contain, than the common apartments, into which it may be supposed that students rarely come, and where the visits are performed with greater dispatch. In a clinical ward, room ought to be left around each bed, for the accommodation of the students, and, as they are to remain three or four minutes, at least, by every bed-side, there ought to be no chance of the atmosphere of the ward becoming quickly deteriorated.

In these two particulars, the number of patients, and the comparative size of the wards, the medical clinic of Vienna perfectly corresponds with the above ideas; but in another respect it struck us as being extremely defective, namely, in the want of small separate rooms for patients labouring under contagious diseases, for phrenitic, maniacal, and hydrophobic patients, for young children, and for venereal cases.

The number of beds in each ward is twelve. Over each bed is hung a black board, on which are written in Latin, the name, age, country, and profession of the patient, the name and duration of the disease, the remedies in use, and the name of the *candidatus assistens* or pupil who has the particular charge of the patient. A painted ticket, hung up along with this board, indicates the diet of the patient, by the words *weak portion, quarter-portion, third-portion, half-portion, whole portion,* terms corresponding with those of the fixed diet-table of the hospital,

which is suspended in all the wards. It seems to be as necessary to teach the regulation of a patient's diet in a clinic, as to teach the powers of drugs. Yet we have seen hospitals where no such thing as a diet-table existed; or if it did exist, it was at least never submitted to the examination of the students; and we have observed, that it was in regulating the diet of their patients, that young practitioners, issuing from such a school, were ever most at a loss.

The number of patients treated in this clinic, during the school year, is above 200. In 1807-8, the number was 226; in 1808-9, 269. They are chosen out of a thousand patients; and the selection made by Professor Von Hildenbrand, as well as his whole manner of conducting the clinic, seemed highly judicious. He did not search for extraordinary cases, seldom ventured upon new experiments, and despised to raise the wonder of the unexperienced by a show of boldness or of novelty. It was the great object of his instructions to make known to his pupils what is already approved and certain in the healing art, and to teach them the method of observing, examining, and treating, every kind of internal disease. He chose from among the numerous patients who daily entered the hospital, some acute cases, and some chronic, some common, and, occasionally, some which were rare; but his choice never seemed to be made with the view of putting to the test any whim of the day, nor of flattering the passion of the young for remedies, and even for diseases, which are supposed to be newly discovered. Puerperal women, patients with syphilis, and children, were occasionally admited.

When we visited the medical clinic in Dresden, we were surprised to hear from the learned Professor Kreisig, that he admitted scarcely any other than chronic and extraordinary cases, leaving the students to gather their knowledge of the acute and more frequent diseases, from any opportunities which they might enjoy of witnessing private practice. We have also understood that some clinical schools of medicine are occupied in little else than new experiments. Both these plans appear to us very inferior in utility to that of the clinical school of Vienna. "In schola medico-practica morbi populares et vulgares prae aliis pertractantur. Quotidianos enim, semper et ubique obvios morbos quam optime cognovisse oportet."

The visit in the medical clinic is from eight to nine in the morning. The assistant, who is a graduate, and is styled *Sekundar-Arzt,* regularly follows the visit, and along with those students who choose to attend, visits again in the evening. We have already remarked that no one can take the degree of doc-

tor in medicine in the University of Vienna, without having attended this clinic for two years, and treated under the eye of the professor, two patients within the half year preceding his offering himself for examination. This is absolutely required, but we should suppose that each student has the opportunity of treating five or six patients at the least, each year of his attendance. The number of students at the beginning of November last was about sixty, including foreigners.

The duties of the *candidati assistentes* or students who have the care of patients, consist in examining the particular patient committed to their care, publicly on his admission, and again at every visit; in writing out a *historia morbi*; and in keeping a careful journal of the symptoms and treatment. These cases are never written in a short and imperfect manner: they are not made up of mere hasty notes of symptoms, strung together without order: they contain a faithful and minute account of the state of the patient, at the last morning visit, at noon, and at evening, with observations, and even occasionally short arguments in regard to the diagnosis, prognosis, and treatment. Each report is dated both by the day of the month, and by the duration of the disease: they are written in Latin, are publicly read at the bed-side, and on the dismission of the patient, are delivered to the professor.

On the patients admitted at the opening of the clinic in November last, we had the pleasure to hear Professor Von Hildenbrand illustrate with great precision and detail his manner of examining a patient. We have never seen a more calm and unprejudiced observer of morbid phenoména, nor one more careful and acute. To use his own words, his examinations were conducted "accuratè, pensiculatè, et patienter." The *candidatus assistens* inquired into the symptoms, was asked what he considered the disease to be, what treatment he would pursue, under what formulæ he would prescribe, and what prognosis he would dare to pronounce. All this was done by Professor Von Hildenbrand, in a manner equally remote from betraying any desire to catch his scholar in an error, or to smother those flashes which occasionally fly from genius under whatever circircumstances; and, on the other hand, from that indifference and stupid condescension, which leads the pupils of some teachers, first of all to familiarity, and then to contempt. He was at much pains in shewing to his pupils the proper positions in which patients ought to be placed whilst they examined them; in explaining the order in which their questions ought to be put, and the manner in which the state of the internal parts of the body was to be ascertained by viewing and feeling the external.

Avoiding all vague conjectures, he taught them that it was purely to what offered itself to the senses that they should attend, in examining the symptoms of a disease. In exploring the different parts of the body and the state of the functions, he preferred an anatomical to a physiological order. He began with the head, descended to the thorax and abdomen, passed to the extremities, to the surface of the body, and to the excretions; and he somewhat quaintly remarked, that this was an order pointed out by nature. "Pro diversa nobilitate, viscera in diversa altitudine locavit." His work entitled "Initia Institutionum Clinicarum," contains exact rules for the guidance of his pupils in their examinations of patients; in determining the nature, form, stage, and degree of diseases; in fixing their names, treatment, and prognosis; and in writing the history of the cases. It has, perhaps, too much of a scholastic air to be all at once relished by common English readers; but we have met with no work which could better serve as a guide both for clinical students and for clinical teachers.

Nor did Professor Von Hildenbrand distinguish himself more above all the clinical teachers to whose lessons we have been admitted, by the keen-eyed precision with which he regarded the symptoms, causes, treatment, and prognosis of a disease, than by the purity and fluency of the Latin diction in which his observations at the bed-side, as well as his lectures were delivered. The whole of the conversation between the professor, assistant, and candidate, was carried on in Latin. Professor Von Hildenbrand seemed to us to speak Latin better than he did his own language, and though we are more favourable to the Italian and Scottish, than to the German manner of pronouncing Latin, we could sometimes have fancied ourselves in ancient Rome, and that the person whom we heard was not a Galician of the nineteenth century, but Celsus himself.

No formal clinical lecture was given by Professor Von Hildenbrand. His remarks upon the cases were all delivered at the bed-side. This not only saved the tiresome repetitions of which formal clinical lectures are usually more than half made up, but was also more impressive. Besides, when he has the patient before him, the lecturer, though he may mistake, can scarcely dare to misrepresent. The lectures which Professor Von Hildenbrand delivered daily from nine to ten, formed a systematical course upon the practice of medicine, and were given by him, not as clinical professor, but as professor of the practice of medicine in the university. We cannot but remark the very respectful behaviour of the students towards this celebrated teacher. When he entered the *auditorium* every

person rose, and as he passed up to the cathedra, he received the most profound marks of respect. At the conclusion of the lecture, the same ceremonies were repeated, and none dared to leave the room before Von Hildenbrand. All this was done every day; but the manner in which it was done, proved how much the respect of the auditors was heartfelt, and how distant these ceremonies were from cold or hated formalities.

Professor Von Hildenbrand might be regarded as an Agathaeus Spartanus. He was known over all Germany, a country which is but too much overrun with hypotheses, and all the other offspring of a futile philosophy, as being one of the ablest supporters of an eclectic school, in which the doctrines of rational medicine were combined with those of empirical. That he was in a word, a rational empiric, appeared at once from his clinical practice, from his prelections, and from his writings. Hypotheses formed a frequent topic of his keen animadversion, and was even the subject of our introductory conversation with him. " Melior omnino nulla foret, quam hypothetica medicina, phantastica et futilis, tot hominum sacrificiis cruenta."

His frequent mention of the serous and mucous membranes, as of great importance in the explanation of morbid phenomena, and his opinion that diatetic means of cure are of greater value than pharmaceutical, were apt to recal the nosological and therapeutical principles of Pinel. To what are styled active methods of treatment, Professor Von Hildenbrand was not favourable, and having but small faith in the alleged power of drugs, he in general adopted and recommended simple, mild, and indirect means of relieving and assisting nature. It seemed to be the observing spirit of Hippocrates, enlightened by all that physiology and pathology have discovered since the days of the father of medicine, which shone forth in Von Hildenbrand, guiding him in his inquiries, and leading him to watch the most minute changes which nature herself effects in diseases, but without blinding him to the agency of any really useful remedy.

We can scarcely conceive any improvement which could be made in the clinical education of physicians at Vienna. The system seemed to us to be perfect. A stage for dramatic and affected exhibitions, or for hazardous and ill-directed experiments, is the idea which is apt to rise in the mind upon mention of a clinic. But in that of Vienna, both the physician and the pupils, seemed to do every thing as they would have done in private practice. It seemed as if the students were led by Von Hildenbrand into the private houses of his patients, and as if the pupils were not learning a lesson in an hospital, but begin-

ning to practise for themselves, with the advantage of having an experienced and able practitioner with whom they might consult. The graduates of Vienna have not idled away the season for practical improvement. Placed in a situation suited as well for the communication of knowledge, as for the elicitation of talent, they are schooled in penetration, and in actual habits of observation, and bring into the chambers of the sick, something more than book-learning, something widely different from fashionable accomplishments.

*(To be continued.)*

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ART. IV. *Nouveau Dictionnaire d'Historie Naturelle appliquée aux Arts. Article " Dents." Vol. IX. p.* 252. Paris. 1817.

THE elaborate work from which we have selected the subject of this article, possesses in a high degree all the advantages which characterize that class of publications to which it belongs. With such names as those of Biot, Chaptal, de Blainville, Lamarck, Latreille, Thouin, Sonnini, and many others of equal rank in the scientific world, each taking a separate department in the work, its promises of excellence were almost unrivalled, and it is no small praise to say, that these promises have been fulfilled. We could have wished some of the articles to have been a little enlarged, and perhaps a few of the more speculative, somewhat curtailed; but upon the whole, we consider it as an invaluable addition to the library of the naturalist, as well as of those whose occupation consists in any application of natural history to the arts.

The article "*Dents*," from the pen of the ingenious De Blainville, partakes in an eminent degree of the excellence which we have attributed to the whole work. It is principally devoted to the comparative anatomy of the teeth, and in his arrangement he divides animals into the four principal types or grand divisions, viz. " osteozoaires," or vertebral animals, " entomozoaires," comprizing insects and worms, " malacozoaires," or soft bodied animals, " actinozoaires," radiated animals, as asterias, &c.

It is of course to the first of these grand divisions that the attention of our author is principally directed, as the animals of which it consists are the only ones which can be said to possess

true teeth, and these are divided into classes, and again subdivided into sections depending upon the number, arrangement &c. of those organs which form the subject of the article.

A scientific *arrangement* of the teeth in the class mammalia, dividing them not only into the common classes of incisores—cuspidati, canini, or laniárii—and molares—but into more minute divisions, depending upon their situation, mode of action, use, composition, &c. has long appeared to us a desideratum in natural history. Mons. de Blainville has effected but little in this respect, yet has not left it wholly untouched. In availing themselves of the arrangement, &c. of the teeth in their definitions, naturalists have hitherto been contented with the vague distinctions just alluded to. The glires and pecora for instance are divided frequently according to the number of their molar teeth, but no mention is made of a most important circumstance, namely, that they are *graminivorous* teeth, the structure of which differs totally from the carnivorous ones of the primates and feræ, the former consisting of perpendicular laminæ of bone, enamel, and a substance of intermediate hardness, called by Blake crusta petrosa, by means of which they wear down irregularly, and constantly present a rough grinding surface, whereas the food of the latter not requiring so much mastication, their teeth are simply covered with a layer of enamel: this circumstance would form one important feature in the division proposed, which may be assisted by subordinate, though obvious distinctions, to which appropriate names might be applied. On this subject however we shall confine ourselves to these brief hints, as we have reason to expect that it will be shortly taken up in a more extensive and practical point of view in this country. Throughout the whole of the article, Mons. de Blainville has displayed the usual characteristic of his mind; we mean a degree of ingenuity almost *hyper*-scientific. There is about him an originality—a boldness of theory, which is not only peculiar to his country, but to the constitution of his own genius. His observation is close, and his remarks in general singularly appropriate. He appears constantly to have in view the adaptation of causes to their effects, of facts and circumstances to their specific objects. We shall give a short extract or two as an illustration of this remark, not selected on account of any superiority which they possess over the rest of the essay, but as fair, and certainly not *too favourable* specimens of the general character of his style.

" La manière dont les molaires d'en haut, et celles d'en bas s'engrènent, est encore beaucoup plus importante à considérer, puisqu'il s'ensuit le mode de mastication, et par conséquent la nature de la

nourriture ; ainsi les dents de la mâchoire inférieure peuvent correspondre exactement, par leur couronne, à celles de la mâchoire supérieure ; ou bien cela n'a lieu qu'à moitié ; c'est-à-dire, que la moitié interne de la couronne des dents supérieures correspond à celle des inférieures, tandis que le bord des supérieures étant tranchant, se croise au côté externe des inférieures: enfin, quelquefois les deux séries se croisent entièrement, comme dans les chats." &c. P. 260.

" La profondeur de l'implantation de la dent dans les mammifères est proportionnelle à l'effort que l'animal doit faire avec ; ainsi les dents défensives de certains espèces de singes, de presque tous les carnassiers, de quelques ruminans, qui sont ce qu'on nomme les *canines*, sont profondément implantées ; mais elles le sont peut-être encore moins que les incisives des animaux rongeurs, qui servent quelquefois d'organes de défense comme dans les éléphans, mais plus souvent d'organes propres à ronger, à détruire les corps les plus durs commes cela se voit dans les castors," &c. P. 261.

Whilst, however, we give the author of this valuable article the highest credit for the application which he has evidently devoted to his subject, and for the scientific manner in which he has arranged it, yet we owe it, at the same time, to our readers, and, we will add, to science itself, to enter our protest against a custom which is but too frequent amongst hypothetical physiologists ; we mean the mere *assertion* of a doctrine, without attempting its support, either by facts or arguments. When we consider the influence which the authority of a great name gives to an opinion, and the effect too which a bold assumption has upon the minds of those who have either no inclination, or no opportunity of investigating for themselves, we cannot reprobate, in terms sufficiently strong, a mode of proceeding so disadvantageous to the interests of science, and so subversive of that legitimate philosophical deduction, which forms the distinguishing and glorious characteristic of the philosophy of the present age. Such conduct is unworthy of a man of science ; it has not even the flimsy apology of ingenuity, which hypothesis itself, however fanciful, frequently possesses. We are led to these observations by an error of this description, of which our author has been guilty, involving a question of considerable interest, and which, though often debated, appears to be " adhuc sub judice." After following Blake in his account of the formation of the teeth, on which subject he does not, in any material point, differ from that ingenious writer, and describing the pulp from whence the bony substance is formed, he proceeds to designate the tooth itself in the following words : " La deuxieme partie désignée sous le nom de produite, d'excrétée d'extérieure, de *morte*, partie beaucoup moins essentielle dans

tout l'appareil, porte le nom de *dent, proprement dite*," p. 254. And in the next page, " La partie excrétèe ou *morte*, c'est a dire la *veritable dent*." In this hasty manner we find the author asserting, or rather taking for granted, the unorganized structure of the tooth, without attempting, by either fact or argument, to controvert the opposite opinion, which has been so often, and, to our minds, so satisfactorily supported by Blake and others. In exactly a similar spirit, but still more boldly, an ingenious countryman of our own has lately declared the vascularity of the teeth to be " a doctrine refuted by every circumstance in the formation, structure, and diseases of these organs." It is a shrewd presumption against the truth of such assertions as these, that in *no one instance*, within our observation, is there a single fact stated in support of them, nor an argument adduced by which they may be rendered even plausible. We shall not content ourselves with this negative plea, in favour of our own opinion, but proceed to state some of the grounds upon which it has been formed.

The ideas which Mr. Hunter embraced upon this question were more vague, perhaps, than those he possessed on almost any other subject; yet the very experiments which he instituted, and from whence he deduced the strange conclusion, that " the teeth are to be considered as extraneous bodies with respect to a circulation through their substance," appear to us so many presumptive proofs, at least, of a contrary opinion. Blake, whose ingenuity in instituting his experiments, can only be equalled by the judgment which always directs his conclusions from them, declares, that not only do growing teeth become tinged with madder, as the experiments of Hunter also testify, but that the colouring matter becomes subsequently absorbed. If this be correct, and we cannot doubt the authority of so accurate an observer as Dr. Blake, it follows that the teeth possess absorbents; but does not this imply vitality? Does vitality ever exist without regular organization? What, it may be asked, is the object of that beautifully delicate, and highly organized membrane which lines, and almost fills, the cavity of the tooth? With more of boldness, than of either ingenuity or candour, the opponents of this doctrine will tell us, that this elaborate structure is intended to fix the teeth firmly in their sockets. Such an assertion scarcely deserves an answer. Is it conceivable that nature, whose operations are always characterized by an exact relative adaptation of causes to their effects, would apply a minute and highly sensitive nerve, as a sort of ligature, to bind more firmly what is already so steadily fixed? It is surely more rational to conclude that the nerve and vessels

which enter the cavity, and are so beautifully arranged within it, are destined to the nourishment of the tooth; if this be not their object they are useless. That the nerve penetrates the substance of the tooth and enters into its structure, is distinctly proved by the following simple circumstance. We have occasionally seen persons whose teeth have, from some cause or other, become partially denuded of the gum about their necks, and the bone quite exposed; in these cases the application of a knife or other hard substance to the denuded part, occasioned pain and an uneasy sensation, although the teeth were totally free from inflammation and *general* tenderness. But we have, perhaps, already said too much on this subject: it is not our province in a casual review, to enter far into the mazes of controversy, though we felt ourselves called upon not to suffer so important an error to pass without some animadversion.

To return, therefore, to our analysis. We were highly gratified by an excellent synoptical table, which presents, to quote its title, " une disposition systématique des mammifères, d'apres l'existence, la nature, la forme, la position, et le nombre des dents." Upon this arrangement he enlarges in the remainder of this portion of the Essay, and has, we believe, gone much farther than any previous naturalist, in realizing what has so long been desired and so generally despaired of, " a classification of mammifera entirely founded upon the nature, form, position, &c. of the teeth;" and has fulfilled his own intention of entering upon the work " dans des détails suffisans pour faire reconnoître un mammifère à la seule inspection de ses dents, et réciproquement déterminer à quelle espèce a appartenu une dent que l'on trouveroit isolée."

In order, however, to effect this desirable object, he has made a few bold efforts, in which we do not conceive he has been either successful or correct. We allude principally to the second section, "*des dens cornées*," comprising the genus Balæna and ornithorhyncus—animals, as he very properly observes, " fort eloignés sous tous les autres rapports." " Dans la baleine, il n'y a de dents cornées qu'à la mâchoire supérieure, c'est ce qu'on nomme les *fanons*."

With just as much, nay, with more propriety, may the strainer in the bills of water fowl be denominated teeth, than this apparatus in the mouth of the whale, to which de Blainville applies that term. The whalebone has no property in common with teeth, except, indeed, that of retaining the animal's prey, which principally consists of the larger molusca; it is in fact a simple straining apparatus, and not bearing any analogy to teeth, either in form, composition, structure, situation, or use.

In the remainder of the article every important circumstance connected with the subject is related with a remarkable clearness and conciseness, and with evidences of scientific research which we have rarely seen equalled, perhaps never surpassed, in any work of a similar kind:—and we take leave of M. de Blainville with feelings of almost unmixed gratification, and the fervent wish of again meeting him in some more finished and elaborate production on the same interesting subject.

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Art. V. *Beschreibung des fuenften Nervenpaares und seiner Verbindungen mit anderen Nerven, vorzueglich mit dem Gangliensysteme. Mit Kupfertafeln. Von D. August Carl Bock, Prosector an den Anatomischen Theater zu Leipzig.* Meissen, bei Goedsche. 1817.

*Description of the fifth Pair of Nerves and their Anastomoses with other Nerves, especially with the Great Sympathetic. With Plates. By August Carl Bock, M. D. Prosector at the Anatomical Theatre of Leipzig.* Meissen, by Goedsche. Folio. pp. 102. 1817.

It must indeed be regarded as a difficult and venturesome undertaking, for the author of this work first to try his strength in the elaboration of a subject, which the greater number of anatomists have regarded as exhausted by the admirable labours of John Frederick Meckel, the pupil of the great Haller, and by the additional researches of a Wrisberg, a Scarpa, a Hirsch, and a Paletta. The circumstance that this is Dr. Bock's first appearance before the public, only adds to our satisfaction and to his own credit, when we find that he has rectified and completed a number of facts, which had been overlooked or mistaken by his predecessors; and we owe many thanks to Professor Rosenmueller for having encouraged the modest and meritorious prosector to the publication of this work, and for having been at the pains of preparing, from Dr. Bock's dissections, the plates which accompany it.

The history of the discoveries concerning the nervous system, would form indeed a very interesting speculation; would at once illustrate the progress of human knowledge, and place in a most striking and warning light, the impediments which have arisen so plentifully from false methods of investigation. We cannot at present pretend to that strength of hand, which would be necessary to trace the outline of such a history, nor even to that

laboriousness which he would require who meant to fill up the minute parts of the picture. We should be glad could we at some future opportunity present to our readers a view of those discoveries, which have been made even in the descriptive anatomy alone of the nerves, commencing with Hippocrates, who appears to have confounded the nerves entirely with the ligaments, or with Aristotle, who believed the nerves to originate in the heart; tracing the progress of this department of anatomy in the hands of Erasistratus, who not only recognized the brain as a principal source of the nervous system, but even distinguished the nerves of sensation from those of motion; in the hands of Galen, who has enumerated seven cerebral nerves; and in the hands of his illustrious successors.

Meckel has given us a history of the fifth pair of nerves. It is not indeed executed with very great minuteness, and in one point, it has struck us as being deficient in that candour, which is so necessary in an historian. He passes from Galen to Vesalius, without mentioning any other names than those of Alexander Benedictus, and of Nicholaus Massa. Now the unfortunate Charles Etienne de la Riviere, the friend of our own Buchanan*, but probably better known to our readers under the names of Stephens and Riverius, appears to have been the first to give a tolerably accurate description of the fifth pair of nerves. He died in prison in 1564. He mentions the three branches of the nerve, and their several destinations, and has especially well described the ophthalmic branch.

It was first of all in an individual of the Simia tribe, that our present author discovered some nervous filaments, taking their origin from the great sympathetic, while this nerve is within the cavernous sinus, whence entering the orbit, they united with the lenticular ganglion. This discovery excited in Dr. Bock the conjecture, that a similar connection probably existed in the human subject. After several researches, he was fortunate enough to demonstrate that it really was so. Opposite to the third incurvation of the carotid, there lies in the cavernous sinus a small ganglion, from which a number of filaments are derived, which unite themselves either to the radix brevior ganglii ophthalmici or to the radix longior. These nervous filaments have not been seen by Dr. Bock alone, in the human subject. They have been already described by M. Ribes, in his Recherches Anatomiques et Physiologiques sur quelques parties de

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* Sæpè mihi Stephani solertia provida Carli
Ad mala præsentem tristia portat opem.
*Georg. Buchanani Elegia cùm articulari morbo laboraret.* 1544.

l'Oeil, contained in the seventh volume of the Memoires de la Societé Medicale d'Emulation, and also by M. Cloquet, in his Traité d'Anatomie Descriptive. The latter indeed has, not without justice, reckoned the filaments in question as part of the great sympathetic. The labours, however, of M. Ribes and of M. Cloquet, appear to have been unknown to Dr. Bock. The discovery of this distinct connection between the great sympathetic nerve and the lenticular ganglion, throws an additional light upon the changes which the iris and pupil undergo in affections of the organs of chylification.

Notwithstanding repeated examinations of the first branch of the fifth pair, Dr. Bock never succeeded in seeing those twigs of the ethmoidal nerve, which are described by most anatomists as passing into the membrane of the frontal sinus. Neither could he perceive any anastomosis between the nerve of the lachrymal gland and the nervus temporalis profundus interior, which is derived from the third branch of the fifth pair. This anastomosis we have repeatedly seen, not indeed by attempting to follow the lachrymal nerve, but by commencing our dissection in the substance of the temporal muscle. Dr. Bock imagines those who have described this anastomosis to have mistaken arteries for nerves. Sometimes Dr. Bock saw a filament of the external branch of the lachrymal nerve connecting itself with the ciliary nerve arising immediately from the ramus nasalis.

The results of the investigations of Dr. Bock deviate most from those of his predecessors in what concerns the distribution of the second branch of the fifth pair, which it must be confessed it is no easy labour to follow, both on account of the extreme tenuity and softness of its filaments, and from its perplexing and concealed course through several osseous canals. A single blow, a little too strong, with the mallet, is frequently sufficient to crush at once the hopes of a toilsome and long-continued dissection of this part of the nerve. The description which till now has been given by anatomists of the anastomosis between the lachrymal nerve and the cutaneous nerves of the cheek, Dr. Bock affirms to be incorrect. He has given a more accurate account of the alveolar nerves of the upperjaw than heretofore. The deep branch of the vidian nerve is regarded by our author as a branch of the great sympathetic, in favour of which opinion its reddish colour and its softish structure furnish no inconsiderable proof. According to this view of the matter, the ganglion of Meckel also is looked upon as a part of the great sympathetic, or to use the language commonly employed in the schools of Germany, of the ganglion-system. The same view of the ganglion of Meckel has been adopted by M. Cloquet.

The superficial, or petrous branch of the vidian nerve passes into the Fallopian canal, connects itself with the facial nerve or portio dura, which is traversing the same canal, and sometimes sends down filaments to the branches of the great sympathetic, which wreathe themselves around the superior part of the carotid artery. The nerves which go to the roots of the teeth are very well described.

In his investigation of the third branch, Dr. Bock was so fortunate as to discover the nerves which are destined for the tympanum. Till now we had been led to believe that the nerves for this cavity were derived from the chorda tympani. According to our author, no branches are given off by the chorda; but the superficial temporal or external auricular nerve gives origin to the nervus superior meatus auditorii, from which the branch for the tympanum takes its rise. This branch spreads itself out over both laminæ of the tympanum, and anastomoses by means of one or two filaments with the chorda tympani.

That part of the work which relates to the great sympathetic is extremely exact. At the conclusion of the work are some valuable observations on the great sympathetic of the simia callitrix.

The three very distinct and instructive plates are much to be recommended to beginners, who frequently find it difficult to form a lively idea of the manifold connections of these nerves, which yet play so important a part in the natural and morbid physiology of the head. Upon the whole, this work differs widely from the ordinary books of anatomy, the authors of which may well be said to "weave the same web still; twist the same rope again and again," and to compose their systems as apothecaries do their mixtures. Dr. Bock has taken nothing for granted.

For the sake of those who may be but commencing the study of neurology, it may not be improper to give here a short statement of the anatomy of the cephalic part of the great sympathetic, as it is now made out by the researches of Messrs. Ribes, Cloquet, and Bock.

From the superior extremity of the superior cervical ganglion of the great sympathetic, arise a number of exceedingly delicate filaments, which attaching themselves to the external surface of the internal carotid artery, over which they form a kind of plexus, accompany every branch of that artery. Concerning these there is nothing more to be said.

Besides these filaments, there are, according to Bichat's manner of describing this part of the nervous system, two nerves

of a considerable bulk, which arise from the superior extremity of the superior cervical ganglion of the great sympathetic. These nerves ascend together into the carotidian canal of the temporal bone. There they separate from each other in such a manner that the internal carotid artery lies between them.

One of these nerves, having reached the superior orifice of the carotidian canal, anastomoses with the carotidian branch of the vidian nerve, and then passes on to join the nervus abductor or sixth pair.

The other nerve accompanies the internal carotid artery into the cavernous sinus, where it anastomoses with the nervus abductor or sixth pair. Frequently it divides into two or three twigs, which embrace the artery, and then join the sixth pair. These twigs are attached to the artery, and even give off filaments to its tunics.

The above is the anatomy of the nerves arising from the superior extremity of the superior cervical ganglion of the great sympathetic, received by the followers of Bichat, who, whatever may be thought of his physiology of the great sympathetic, certainly very much improved the manner of describing this nerve.

According to the new anatomy, then, of this part of the nervous system, the carotidian branch of the vidian nerve is regarded as a nerve derived from the superior extremity of the superior cervical ganglion. It is described as penetrating the vidian canal to join the Meckelian ganglion.

The cranian branch of the vidian is described as another nerve, also taking its origin from the superior extremity of the superior cervical ganglion, entering the cranium by the foramen lacerum anterius, traversing the superior surface of the petrous portion of the temporal bone, and sinking into the aqueduct of Fallopius, there to anastomose with the portio dura of the seventh pair.

As to the anatomy of the great sympathetic within the cavernous sinus, two or three twigs are described as uniting to form a small swelling or ganglion, which is said most ordinarily to attach itself to the nervus abductor, or sixth pair. From this ganglion arise certain very delicate filaments, which passing on the internal side of the internal carotid artery, where this vessel is opposite to the pituitary gland, find their way to the infundibulum of the gland, and are there distributed.

Other filaments derived from this same ganglion, which if it be to receive a name, may be called the cavernous ganglion of the great sympathetic, enter the orbit by the fissura lacera of the sphenoid bone, associating in their course with the ophthal-

mic branch of the fifth pair. One or two of these filaments pass forwards to gain the posterior side of the lenticular ganglion, and have actually been seen uniting with it between the branch of the nasal nerve and the branch of the third pair, from which the lenticular ganglion is usually described as originating.

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Art. VI. *Mémoire sur la Membrane Pupillaire et sur la Formation du petit Cercle Arteriél de l'Iris. Par Jules Cloquet, M.D.* 8vo. Paris. 1818.

The following extracts contain the most interesting part of M. Cloquet's Memoir.

Before the destruction of the membrana pupillaris, the little arterial circle does not exist; and the ramifications which arise from the concavity of the great circle, instead of terminating near the circumference of the pupil in the reciprocal anastomoses by which that circle is formed in the adult, prolongate themselves between the two laminæ of the membrana pupillaris. They advance as far as the centre of the pupil, under the form of very tortuous arcades, varying in size and figure, and having their concavity turned towards the circumference of the pupil. These arcades are very numerous, they do not anastomose with those that are diametrically opposite, but only with those with which they are in lateral apposition. The consequence of this very curious disposition is, that between the convexity of all the vascular arcades, and towards the centre of the pupil, a rather irregular space is left, in which the membrane is destitute of vessels, and consequently is weaker than at any other part.

How is this membrane destroyed? What is the cause of its disappearance? What becomes of it, and of the vessels with which it is so abundantly supplied? At the seventh month of utero-gestation, the membrana pupillaris splits irregularly in its middle, so that a free communication is established between the two chambers of the aqueous humour, which were before entirely separated. The rupture or division takes place precisely at that spot where the arterial arcades turn their convexities to each other, and thence extends between their principal intervals, so that the vessels are untouched. The membrane is not destroyed in the secondary spaces, formed by each individual arcade. The little flaps of the membrane are found adhering to the circumference of the pupil, and floating in the aqueous humour: and

the vascular arcades are seen in these flaps. The vessels have not been torn, but have only retired from the centre of the pupil, diminishing, of course, in their length. The arcades become gradually less and less, and at last retire entirely to the border of the pupil, in order to form the little arterial circle of the iris, which did not exist before the rupture of the membrana pupillaris.

In the fœtus of the ninth month, the little arterial circle of the iris, which is formed after the rupture of the membrana pupillaris, and at the cost of its vessels, is seen placed on the very edge of the pupil; and often even in the new-born child, some of its vessels still advance beyond the circumference of this opening. In the adult, on the contrary, it is entirely situated upon the anterior surface of the iris, at some distance from the edge of the pupil. It is easy to be convinced of the reality of this assertion, by injecting these vessels in fœtuses of young subjects, or upon adults. The vessels which cover the anterior surface of the iris, appeared to M. Cloquet more tortuous after the rupture of the membrane, than before; and he observes, that their arcades are the nearer to the circumference of the pupil, the nearer the fœtus is to birth. It is the vessels of the membrana pupillaris, which partly form, in the adult, the coloured arcades, which we observe towards the little circumference of the iris, and which have been described by Haller, Ruisch, Zinn, &c.

The figures, given by Walter and by Soemmering, are certainly contradictory to the statement of M. Cloquet. Both the former anatomists have represented the arcades in question as anastomosing across the centre of the pupillary membrane. We have also seen, in the museum of Mr. Charles Bell, a preparation in which an artery passes across the pupil, from the one edge to the other, being the whole remains of the pupillary membrane.

Dr. Beer is of opinion, that the common idea of a pupillary membrane is totally erroneous. He thinks that there is no animal motion in the fœtus, till the sixth month; but that at that period the embryo receiving animal life, the iris, till then completely closed, opens itself, as the eye-lids had done some time before, and that then the pupil is formed. This opinion appears in harmony with those of M. Cloquet.

ART. VII. *Ueber Nachstaar und Iritis nach Staar Operationen, von Dr. Joh. Adam Schmidt.* 4to. 84 pp. Wien. 1801.

*On Secondary Cataract and Iritis after the Operations for Cataract, by John Adam Schmidt, Med. et Chirurg. Doctor.* Vienna. 1801.

WHEN diseases of the eye were considered as the province of a distinct set of men, little progress was made in acquiring a knowledge of their nature. The minds of oculists have constantly been more engaged in contriving cures, than in investigating disease. Hence, the principal result of their labours has been the invention of numerous instruments and operations; for they, like all other mechanics, have put their chief merit in tools, and in the dexterity with which they could use them.

It is only when the diseases of the eye have been the object of the attention of general pathologists, that any real progress has been made in regard to them. The investigation of the nature of morbid actions and changes, has been the most striking feature of the labours of this class of individuals; and to the philosophical spirit of research, with which they have pursued the subject, must be attributed the valuable improvements which they have made in the treatment of the diseases of the organ in question. To point out the many substantial benefits conferred by these men, in opposition to the trifling inventions of the others, is not at present intended. Had it been so however, a better illustration of the truth of this assertion could not have been found, than in the essay and author now before us.

Of the high value of the work itself, the subsequent parts of this article will contain sufficient proofs; and Schmidt was a general practitioner, whose attention to diseases of the eye arose out of such accidental circumstances, that they deserve to be related. The following are his own words, and form part of an explanation which he conceived necessary to make, for venturing to criticise some parts of Richter's Observations on the Diseases of the Eye.

"I was already lecturer on anatomy and surgery in the Josephine Academy, and had been engaged for some years in general practice, at Vienna; when, in the year 1789, Professor Barth expressed a desire to give up his chair and retire from practice. Barth's prosector Ehrenritter, and myself were appointed, by the Emperor Joseph the Second, to be particularly and specially instructed in a knowledge of the Diseases of the Eye, by Barth. In doing this, Barth was

occupied two years, at the end of which time we were obliged to operate publicly, before a commission of physicians and surgeons, appointed by the court," &c. &c.—Ophthalmologische Bibliothek, Vol. I. p. 43.

From this period, 1791, Schmidt seems to have paid particular attention to the diseases of the eye, and in 1801, his first work on any part of the subject, the present Essay on Secondary Cataract and Iritis, made its appearance. We do not mean to consider the first-mentioned part of this work at present, but shall confine ourselves entirely to the consideration of Iritis *.

In investigating the nature of secondary cataract, in determining its different varieties, and in establishing what ought to be understood by the term secondary cataract, he shews that under this name there has been very absurdly comprehended an opacity in the pupil, succeeding the operations for cataract, dependent neither on the lens nor its capsule, and consequently having nothing of the essence of cataract in it at all. This opacity is always preceded by symptoms of inflammation, and is formed by coagulable lymph effused into the pupil. In short, it is the consequence of iritis, or inflammation of the iris, a disease, the different forms of which our author then proceeds accurately to describe.

It is somewhat remarkable that the phenomena attending inflammation of this membrane should only so lately have been observed and described. Next to the conjunctiva, it is the texture of the eye which is most frequently affected with inflammation, and the changes which this process occasions, can no where else be so distinctly seen or examined.

The iris often becomes inflamed in consequence of artificial or accidental wounds of the eye-ball. Constitutional syphilis frequently affects the eye, producing a peculiar and characteristic iritis. The iris is the texture which is the seat of inflammation in the distinct kind of ophthalmia, so frequently met with in gouty constitutions. In the rheumatic ophthalmia, the inflammation, though never originating in the iris, frequently extends to it. And lastly, an inflammation of this membrane sometimes accompanies cutaneous eruptions; particularly those, which though not syphilitic, have succeeded sores of the genitals, and are generally supposed to be connected with the abuse of mercury.

In iritis of such different origins, the general outline of the

* Professor Schmidt was the first both accurately to discriminate this disease from the various kinds of ophthalmia with which it was previously confounded, and to give it the name of *Iritis.*—It is surprising that this important Essay has not hitherto been noticed in England.

appearances produced by the inflammation is every where the same, but in the details there are a number of little varieties and minute differences, sufficiently constant, and characteristic of distinctions in the nature of the inflammatory process.

The disease, therefore, has several well marked species, which, from the importance in regard to treatment, it is of great consequence to distinguish from each other. Common inflammation of the iris, or, as it may be called, idiopathic iritis, is readily known: so is the syphilitic. With the arthritic there is often some difficulty at the commencement. Indeed examination of the eye alone is frequently insufficient for determining the nature of the iritis; but it is generally possible to do this, by associating the local changes with the symptoms of the constitutional affection: even after all, there are some cases which, with our present knowledge of the subject, defy all powers of discrimination.

1. In the *idiopathic iritis*, besides the common symptoms of ophthalmia, there are changes which occur at the very commencement, that indicate the seat of the inflammation. The pupil is seen to be contracted, the motions of the iris are less free, and the pupillary opening loses the bright black colour it naturally possesses. The colour of the iris is next observed to become changed; this happens first in the lesser circle, which gets of a darker hue; and afterwards in the greater, which grows green, if it had been greyish or blue, and reddish, if it had been brown or black. As soon as this alteration of colour has taken place to a considerable extent, in the greater circle of the iris, that membrane swells, and projects towards the cornea; the pupillary margin loses its sharply defined edge, seems now somewhat thickened, and is turned back towards the posterior chamber. The redness accompanying these changes is by no means considerable, and is at first confined to the sclerotic coat, in which a number of very minute rose-red vessels are seen running in straight lines towards the cornea.

The pupil, at the same time, loses its circular form, becomes somewhat irregular, and presents a greyish appearance. Examined by means of a magnifying glass, this appearance is seen to be produced by a substance very like a cobweb, occupying the pupil, and which is soon afterwards distinguished, even without the aid of the magnifying glass, as a delicate flake of coagulable lymph. Into this, the processes or dentations of the irregular pupillary margin of the iris seem to shoot, and it is afterwards found that adhesions are apt to be established, at these points. It is owing to these adhesions that the patient,

whose vision has been all along indistinct, now complains of being able to see one side or part of an object only.

The effusion of lymph into the pupil continues to encrease; it is likewise poured into the posterior chamber, and adhesions between the iris and capsule of the lens are formed. The quantity of lymph effused is sometimes so great, as to fall in a curdled form, from the pupil to the lower part of the anterior chamber. The pupil, the size of which is considerably diminished, now derives a greyish-white colour, from that of the lymph by which it is filled; the morbid sensibility to light, which prevailed at the commencement of the inflammation, is diminished; the powers of vision become gradually more and more limited, and at length merely the perception of light remains.

By this time the redness of the eye has encreased, and partly arises from vessels which are now developed in the conjunctiva. The redness is deepest all around the cornea; towards the periphery of the eye-ball it fades. The cornea loses somewhat of its peculiar brilliancy, and striking changes are seen taking place on the surface of the iris. Lymph appears to have been effused into its substance, for while it projects more and more towards the cornea, its fibres get collected into bundles, giving the surface a peculiarly plaited, or rather, puckered appearance. A yellowish-red tubercle then forms on some part of its surface, but most commonly at that place where the greater and lesser circles of the membrane meet. This tubercle is at first small, it enlarges and projects forwards, and is distinctly seen to be an abscess, which finally bursts, and discharges its contents into the anterior chamber. In some individuals, at this time, a small quantity of blood is extravasated into the anterior chamber.

The inflammatory symptoms now abate, and as the disease subsides, both the pus and blood in the anterior chamber are absorbed. The shreds of the cyst of the abscess, which hung floating in the aqueous humour, in a few days disappear. The anterior chamber regains its transparency; the iris remains permanently expanded, its motions being completely annihilated; its greater circle resumes its natural colour, but the lesser does not; the puckered appearance remains; the pupil is closed; frequently only a vestige of it remains, which is filled up by an ash-coloured membrane: the power of vision is entirely lost. This state of the eye is named by Schmidt *atresia iridis completa,* closure of the pupil.

The condition in which the eye is left by the inflammation is not always so unfavourable. Perhaps no abscess has formed, and the quantity of effused lymph has not been so great as in

the former instance. When the inflammatory symptoms subside, the iris, though remaining considerably expanded, is found still to possess some degree of mobility, and its natural colour has been almost entirely regained. Though the pupil is unusually contracted, the piece of coagulable lymph which occupies it, is reduced by absorption to the state of a thin membrane, which is opaque towards its centre, but somewhat transparent at the edges; the pupillary margin of the iris does not adhere all round to this membrane, but only at some points, the others remaining free; vision is impaired, but not destroyed. This constitutes *atresia iridis incompleta,* contracted pupil.

At other times, only part of the iris has been affected with inflammation. When this has gone off, a mere thread of opaque matter remains in the otherwise transparent pupil. By this, a single point of the pupillary margin of the iris is held fixed; while every other part is free, and their motions perfect. This is the *atresia iridis partialis* *.

Such are the appearances which the iris presents when it becomes the seat of inflammation in a healthy individual, and such are the most common terminations, when that process has been limited to the iris itself. But it sometimes happens that the inflammation extends from this to some other textures of the eye. When the cornea has been attacked, it becomes cloudy and thickened; and, at the same time, the iris projecting, the two inflamed textures come into contact, and adhere before any visible effusion of lymph takes place. In other cases, adhesion is formed between them by means of a pseudo-membrane, produced by the organization of the effused coagulable lymph. Of course the extent of these adhesions varies very much.

If, on the other hand, the inflammation has spread deeper, and attacked the membranes of the lens, and of the vitreous humour, the choroid coat, &c., then the violent symptoms of deep-seated inflammation of the eye take place. Even if the form of the organ is preserved, vision is totally destroyed; but often the eye suppurates, bursts, and almost entirely disappears.

Having given this history of idiopathic iritis, before noticing the causes from which the disease arises, it will be better to take a view of those symptoms which accompany the other species.

2. Why the poison of syphilis, when introduced into the system, should affect the iris, and what are the peculiar circumstances under which this happens, are subjects which have not yet been explained. The fact, however is certain,

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* Schmidt, p. 59.

that an inflammation takes place in this membrane of the eye, which is as characteristic of the presence of the syphilitic poison in the constitution, as are any other of its secondary effects. But of the immediately exciting causes of this inflammation we know nothing. It appears in company with all the other constitutional symptoms of lues; and it takes place singly, before any of these have yet appeared.

A pale redness all round the cornea, is the first symptom perceived in the *syphilitic iritis;* this is at first seated in the sclerotic alone, but the conjunctiva very soon shares in it, and afterwards becomes much the more red of the two. However few the vessels may be elsewhere, there is always a broad zone of them all round the cornea, a zone formed at this place not only by the vascular net-work in the conjunctiva, but by the ciliary vessels on the external surface of the sclerotic. The redness has a peculiar tint, for instead of being bright red it is brownish, something like the colour of cinnamon. From this zone the vessels have a tendency to be prolongated under the edge of the cornea. The whole cornea now becomes uniformly hazy, losing its clearness without being in any place actually untransparent. This appearance of the cornea seems dependant on some affection of its posterior surface, or more accurately speaking, of the membrane of the aqueous humour, by which it is lined. The pupil becomes contracted, and the iris limited in its motions, as in common iritis; but the pupil does not preserve its natural situation. It is removed in a direction upwards and inwards, towards the root of the nose, and is irregular. Along with this, the iris loses its natural colour, and projects forwards.

There is always an aggravation in the symptoms towards evening; the intolerance of light and painful sensibility of the whole eye increasing, and a gush of tears following every change of light and temperature. At length a regular nightly pain sets in, is extremely severe, and is strictly limited to that part of the cranium immediately above the eyebrow. It usually begins between six and seven in the evening, gradually increases, reaches its utmost height about midnight, and then diminishes, till about four or five in the morning, when it ceases. After every such attack of pain, the pupil is found more contracted, drawn farther upwards and inwards, the iris more altered both in colour and form, the quantity of lymph increased, and consequently vision more impeded.

Peculiar appearances then take place in the iris, for either on its pupillary or ciliary margin, or on both, there arise one or more reddish-brown tubercles, which have a spungy look,

and when examined with a magnifying glass, seem to have a striking resemblance in structure to the condylomata, called crista galli. Their growth is pretty rapid. Lardy-looking ulcers sometimes appear on the cornea and white of the eye, or on the integuments of the eye-lids.

Even when the syphilitic iritis terminates in the most favourable manner, the eye for a long time afterwards is peculiarly sensible to the influence of cold and moisture. On every exposure to these, the organ becomes morbidly sensible to light, gets a slight blush of red, and discharges tears. Indeed, frequently for more than a year afterwards, on every sudden change of temperature, a pale violet-coloured zone appears around the cornea, but which disappears when the eye has remained for some time exposed to the same temperature.

3. The *arthritic iritis* originates in two ways. In the one it is the primary and sole affection of the eye; in the other a gouty individual having some common ophthalmia, this iritis engrafts itself upon it. The same happens with the syphilitic iritis, but rarely; while in the arthritic this manner of origin is the more common.

Before any symptoms of this inflammation appear, a peculiar tingling sensation is sometimes felt around the eye. There is a feeling as if a single hair was hanging on the face, or as if something was creeping on the skin. The eye and orbit then become the seat of a racking pain, which extends to the temple, shoots through the half of the cranium, and into the upper and under jaw. The sclerotic reddens; the flow of tears is increased; and by the frequent opening and shutting of the eye-lids a peculiar white frothy matter is forced out between them, which is quite distinct from the secretion of the Meibomian glands.

If the eye be examined with a magnifying glass, it will be seen that the blood-vessels in the sclerotic coat do not, as in the syphilitic iritis, proceed quite to the edge of the cornea, but disappear a short way before they reach it. Thus, a narrow ring of bluish-white sclerotic is left all round the cornea, and this ring becomes manifest to the naked eye as soon as a net-work of red vessels appears in the conjunctiva. These latter vessels shew from the very first a strong disposition to become varicose, which state of the vessels is afterwards so remarkable, as to be quite characteristic of arthritic iritis. The colour of them is also peculiar; it is not red but *purple*. The sclerotic loses its pearly white appearance, and becomes of a dirty greyish-violet colour.

The changes in the iris vary in two different habits of body. In individuals who are meagre, irritable, and have a tense fibre,

the iris becomes expanded, the pupil contracts, &c. as in the idiopathic iritis. And in such cases the only characteristic symptom besides the white ring of sclerotic, is a varicose state of the blood-vessels of the iris, which, however, only takes place when the disease has fully developed itself. The inflammation is always attended with general fever, before it arrives at this state. And if the eye is left to itself, without any suppuration taking place, it begins to be absorbed, and at last its volume becomes extremely diminished.

In individuals who on the contrary are of a gross habit of body, possess little sensibility, and have a lax fibre, in whom gout is most common, a different set of changes takes place. The iris instead of being expanded, contracts remarkably, and at the same time loses its motion and colour. The pupil is not uniformly dilated, for the iris contracts more towards the two angles of the eye, and in consequence the pupillary opening assumes an oval shape; indeed the iris sometimes becomes so narrow on the two sides mentioned, particularly on the temporal, as almost to disappear.

With this there is no effusion of lymph, and no abscess takes place in the iris. But behind the enlarged pupil there is perceived a greyish-green colour, which is deep seated, and is actually caused by an affection of the vitreous humour. The lens then becomes affected in a similar manner, loses its transparency, gets a sea-green colour, swells considerably, and projects forward through the pupil, into the anterior chamber. The iris, which now rests on the enlarged lens, seems quite altered from its natural texture; it looks soft, loose, and disorganized, as if it had been subjected to maceration. The attacks of pain during the progress of these changes are regular and very severe. The patient is warned of their approach, by feeling a stinging sensation all round the eye, then an increased flow of tears takes place, and after this the pain commences, and becomes so violent, as absolutely to make the patient writhe under it. The varicose state of the vessels of the conjunctiva is increased, and those of the choroid coat becoming similarly affected, form bluish knots, which shine through the sclerotic. At the same time, there is seen beneath the anterior part of this membrane, a dark ring exactly occupying the situation of the corpus ciliare. Vision is now totally gone. The symptoms of inflammation then begin to decrease, atrophy commences, and absorption takes place, as in the first instance. In either case, if both eyes are not simultaneously attacked, the same process afterwards begins in the other eye, and observes a similar progress.

4. A description of the rheumatic ophthalmia does not belong

to the present subject. When this disease is neglected, the inflammation sometimes extends to the iris, but it does not occasion any characteristic appearances in this membrane, different from those of idiopathic iritis. It is to be observed, however, that abscess of the iris rarely takes place, and that the inflammation seldom goes on to the most unfavourable termination, in *rheumatic iritis*.

5. In the *iritis* which appears in conjunction with the *eruptions* supposed to be connected with the abuse of mercury, the inflammation seems less active than in the other kinds. The pupil is not much contracted, and lymph is less apt to be effused. A vesicle full of yellow matter sometimes rises on the iris without any other alteration in this membrane, than that of colour, the pupil remaining almost unchanged. By the use of proper remedies, this vesicle, even when it seems quite ready to burst, can generally be made to disappear in a few days without that taking place. The blood-vessels of the conjunctiva are large and distended, without being varicose; they have a more livid colour than those in the arthritic iritis, and run quite to the edge of the cornea.

Excepting where iritis follows wounds, we seldom can trace its exciting cause. The arthritic is sometimes evidently occasioned by the influence of cold or moisture on the eye; thus it has been produced by a cold draught of air; but more frequently by the improper application of cold lotions. Where these have been used for that irritable state of conjunctiva which succeeds the operations for cataract, it has repeatedly happened that in twenty-four hours after their first application, the symptoms of the most violent arthritic iritis have appeared, even in individuals who have had as yet no regular symptoms of gout, and has then gone on to the total destruction of the organ. Whenever there is a disposition to gout, all applications to the eye, in the fluid form, should be avoided.

The most manifest exciting causes of iritis, are the operations for cataract. It frequently succeeds extraction. This may happen from the wound in the cornea being made too small, which obliges the lens to be forced out with a deal of squeezing, and with considerable prolapsus of the iris; from some pieces of the lens remaining in the posterior chamber, which must be removed by the repeated use of the curette; or from the flaps of the cornea having been repeatedly and unnecessarily lifted. Depression is not free from this unpleasant consequence. It frequently follows Conradi's operation. Of nine cases in which a needle was passed through the cornea, and the lens merely punctured, three were attacked with arthritic iritis,

and ended unfavourably. In two the lens enlarged, turned green, &c. as in the last described form of this iritis; in the other, lymph was effused into the pupil, and the symptoms proceeded as in the form first described.

The following conclusions, founded on observation, are drawn by Schmidt.

" Iritis follows extraction oftener than depression.

" Its frequency is in proportion to the greater or lesser dexterity of the operator.

" It more rarely occurs among intelligent patients in good circumstances; more frequently among the poorer class, and who from ignorance do not observe the directions given them.

" Of the latter, those operated upon in hospitals are more exposed to it, than those operated upon at their own houses.

" The poorer class of cataract patients are more liable to an attack of iritis after the operation, in spring succeeding a severe winter, than in the height of summer or beginning of autumn.

" There is a risk attending those on whom the operation is performed, while they are in a state of debility.

" Or are of a bad habit of body. Diseases of the skin ; a puffed up washy appearance; a yellowish dirty-coloured countenance; flabby state of the muscles; the skin possessing so little elasticity, that on making a fold of it, this is a long time in disappearing; the eye feeling soft, and reddening on the gentlest touch, are all ominous signs, indicating an asthenic state of the system.

" I am not unconcerned concerning an attack of Iritis, after the operation for partial or complete capsular cataract, which has formed under severe head-ache, or general gouty symptoms.

" After the extraction of ichorous cataracts (where there is a sac containing ichor within the capsule *,) I have invariably seen a most violent iritis, if not suppuration of the whole eye."

The treatment of iritis is conducted on the same principles as those of inflammation in general; but the application of the individual means is modified, by the seat of the inflammation, and by the difference of its nature.

General bleeding is necessary only where there is a great degree of symptomatic fever, and when this is inflammatory.

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* At page 21, in speaking of the *cataracta capsulo-lenticularis cum bursa ichorem continente*, it is mentioned by Schmidt, that after the lens has passed out of the eye, on the capsule being extracted with a pair of forceps, a sac containing a thick yellow fetid pus comes out along with it, and frequently entire.

Beer says that the sac is usually seated between the lens and posterior part of the capsule, and that he has only once seen it between the lens and anterior part of the capsule. *Beer, Lehre von den Augenkrankheiten*, II. Band. p. 301.

Hence it is principally in the idiopathic iritis, that large bleedings from the arm are requisite. In the syphilitic species it is never necessary to open a vein. In the arthritic it is sometimes attended with benefit, but in patients of this description a small bleeding, repeated next day if necessary, is found to answer much better than a large bleeding at once, even though the constitutional disturbance be considerable. In the rheumatic variety it is also sometimes highly beneficial to bleed from the arm.

Local bleeding, by means of leeches to the forehead, or temple, produces the most decided benefit in all the varieties of iritis; and it is a remedy which ought to be used almost in every case.

Purgatives, given so as to act copiously, are of marked advantage in the idiopathic iritis only. In the other species they should be managed so as to keep the bowels merely more open than natural, and even this is not necessary in the syphilitic variety.

Cold local applications are quite useless in iritis.

As to the particular treatment of each species; in the *idiopathic inflammation of the iris,* sixteen or twenty ounces of blood should be taken from the arm; and this is to be repeated, if requisite. Six or eight leeches are to be applied to the brow or temple. A smart purgative should then be given. The application of leeches, but in fewer number, should be continued every day, or every other day, until a decided abatement of the inflammatory action takes place. In the first stage of the process, blisters to the temple or behind the ears have little or no effect, sometimes a large one on the nape of the neck seems to be of service. The only topical treatment which is admissible, is the fomentation of the eye with water made as hot as the patient can bear it, which sometimes procures a mitigation of the violence of the pain. Care, however, must be taken to dry the eye well after using this application.

In the second stage, when the effusion of lymph has taken place, much may be done to promote its absorption. Beer expresses himself thus:—

"When it is observed, at the end of the second stage, that the lymphatic effusion in the posterior chamber, though not preventing, still greatly limiting vision, does not diminish by the treatment which is pursued, so as to allow us to hope for the complete restoration of sight; but on the contrary, that there is reason to dread that the lymphatic effusion will remain in the same state after the second stage has terminated; then not only external, but internal alterative medicines must be had recourse to, in conjunction with the other remedies

proper in this stage of the disease; that is, the preparations of mercury must be employed, which in such circumstances will never disappoint the surgeon, if properly managed.

"Calomel united with opium, is to be given internally, and in conjunction with tonic medicines, as the calamus aromaticus, bark, &c. Externally, a solution of corrosive sublimate in water, to which mucilage and a considerable quantity of vinum opii have been added, produces at first great benefit; and when this loses its effect, or the eye cannot bear any fluid application, which is sometimes the case, then a small quantity of a salve composed of two drachms of fresh butter, six grains of red precipitate, and eight grains of extract of opium should be daily inserted between the eye-lids.

"Frictions once a day, over the eyebrow with mercurial ointment, opium being added to it, very much contribute to the absorption of the lymph effused into the posterior chamber.

"Whoever has not witnessed the striking effect of such a method of treatment of iritis in this stage, cannot possibly form any idea of the extraordinary and rapid improvement, which, when properly conducted, it often in a few days produces. I have repeatedly seen a whitish net-work in the pupil, and which was distinguishable at a distance, disappear in eight or ten days." *Beer, Lehre von den Augenkrankheiten*, B. i. Vienna, 1813, p. 450.

The *syphilitic iritis* cannot be radically cured without removing the constitutional disease, but it by no means follows, that the doing this cures the inflammation of the iris. Were this local affection neglected until it should yield to the constitutional treatment, it would frequently happen that it would have gone too far to be benefited by that treatment, and that the vision of the eye would be destroyed by the effusion of coagulable lymph, which might otherwise have been prevented. Wherever, therefore, there is severe pain in the eye with violent head-ache, &c. three or four leeches should be applied on the brow, and a purgative given, at the same time that the constitutional treatment is to be pursued. But the chief object in view locally, is to prevent those regular nightly attacks of pain which are so invariably followed by an aggravation of all the symptoms. This is effectually done by rubbing well in, over the eyebrow, a small quantity of mercurial ointment with opium added to it, a short time before the pain is expected to come on, and then covering the eye with a folded piece of warm linen. Should the pain threaten to appear towards midnight, this must be repeated.

For the constitutional treatment, calomel is perhaps on the whole, the best preparation of mercury, and it should be given in small doses, but repeated twice or thrice a day. In individuals of a doughy habit, and who have never had complaints of the chest, Beer prefers the sublimate to all the other preparations

of mercury. And even in those whose chest is not perfectly free, he has lately given it with the most happy and speedy success, dissolved in sulphuric ether with an addition of laudanum. In haggard, debilitated, very irritable individuals, disposed to diseases of the chest, he prefers the calomel and combines it with opium *.

The *arthritic inflammation* of the iris is the most intractable of all the varieties of the disease, and its treatment is still involved in obscurity, owing to our ignorance of the nature and cure of gout itself. In some cases, particularly those arising after the operation of extracting the cataract, a general bleeding is necessary; but the quantity of blood drawn at once should not exceed ten or twelve ounces, as in patients of this kind, large general bleedings are always succeeded by great increase of feverish irritation and restlessness. The small bleeding may be repeated in twelve or twenty-four hours, if necessary. In most cases, however, the application of a few leeches to the brow, besides its local effect, produces all the benefit on the general affection which is to be derived from the evacuation of blood. The bowels are also to be kept gently open.

In arthritic, as in the syphilitic iritis, particular attention must be paid, in preventing the attacks of pain, and for the same reasons. This is best done by friction on the eyebrow and forehead, with a piece of moistened opium, or a combination of laudanum and volatile liniment. Along with this, exposure to all those causes which occasion an attack of pain, must be most carefully avoided; such are, a cold draught of air, the strong heat of a fire, violent passions, &c. All topical applications must be cautiously avoided. The only exception is dry warmth to the eye. For removing in part the immediate danger to this delicate organ, counter irritants are of essential service. The best is the tartar emetic ointment, rubbed on the nape of the neck, so as to occasion a continued eruption of pustules. If the risk attending the eye is very urgent, the ointment should be rubbed on behind the ears.

All this is frequently only palliative treatment, for if it is no longer possible to cure the constitutional gout itself, then vision, sooner or later, is destroyed.

Patients with arthritic iritis, upon the whole, agree best with gentle diaphoretics as constitutional treatment. Calomel and all mercurials given so as to act on the system, are not only useless, but hurtful in this species of iritis; they aggravate the pain and local symptoms, and occasion an increase of constitutional irritation.

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* Beer's Lehre von den Augenkrankheiten. p. 563. I. B. Vienna, 1813.

It is melancholy, however, to find that all our care and attention are often of no avail whatever in stopping the progress of this severe iritis. In such cases it generally happens, that removal or alleviation of the dreadful pain in the orbit and brow, becomes the most urgent object of our treatment; and the torments of the patient must be witnessed to form any idea of them. Fomenting the eye with hot water sometimes produces temporary relief. When large doses of opium have failed, in a few cases a dram of acetum colchici, with half a dram of vinum opii, taken when the pain has just come on, has procured almost immediate and complete relief, and such patients have remarked as something peculiar, that although they were kept quite free from pain all night, they had however no inclination for sleep.

In a case of this iritis which succeeded the operation of punctuation of the lens, and where all means had been tried, and failed of relieving the pain, the patient, a feeble old man of seventy-five, was so affected by it and the loss of sleep, as to occasion serious apprehensions for his safety. The only remaining chance thought of, was to extract the enlarged green lens, which by its size, &c. might reasonably be supposed to be a considerable cause of the pain. This was done; the pain of the operation was very severe, but after it had gone off, the patient never afterwards had a moment's uneasiness, the wound in the cornea healed, the pupil closed, but the form of the eye was preserved. This was as favourable a termination as could be expected under the existing circumstances, for all perception of light had been lost for a week preceding the extraction of the lens. In another case exactly similar, where the patient would not allow the lens to be removed; the aqueous humour was evacuated; but in thirty-six hours the pain returned as severe as ever.

In the *iritis* which accompanies cutaneous *eruptions*, repeated local bleedings by means of a few leeches, with proper general treatment usually effects a rapid cure. This is the species on the whole which yields most rapidly to treatment. Where there is reason to suppose that the eruptions have arisen from the previous abuse of mercury, calomel has not the least effect on the accompanying iritis; the following case which occurred while this article was preparing for the press, may serve as an instance.

September 14th. A waiter at a coffee-room applied with symptoms of iritis of the right eye, accompanied with cutaneous eruptions, which were decidedly not syphilitic, but were probably occasioned by a very extensive use of mercury, eight months since, for some primary symptoms of an ambiguous nature. The eruptions are of five weeks standing; the affection of the eye began on the 8th. He was ordered a grain and a half of calomel with opium, daily.

18th. All the symptoms of the iritis increased, the eye-ball looks turgid, the blood-vessels which run to the edge of the cornea are large, full, and of a purple hue. The pupil is little contracted, but it is hazy. The iris is motionless, and on the upper and temporal side of it, about mid-way between the ciliary and pupillary margins, there is a small yellowish tumour projecting from its surface. The patient was ordered to take a pill containing a grain and a half of calomel, with opium, night and morning.

20th. The inflammation of the iris increased. The yellow tumour seems nearly touching the posterior surface of the cornea. As the mouth was now affected by the calomel, whilst the disease still increased, threatening the destruction of the eye, its use was discontinued. Three leeches were ordered to be applied to the brow immediately, and a blister behind the ear, in the evening; internally, a saline purgative was ordered, and a tea-spoonful of powder of sarsaparilla to be taken three times a day.

23rd. The inflammation diminished. The size of the yellow sac on the iris is diminished. Can bear light better.

The symptoms subsided after this most rapidly; the application of the leeches was twice repeated at the interval of some days, and under the same general treatment he got rapidly well, the eruptions likewise fading. In three weeks from the commencement of this treatment, not a trace of disease could be perceived on the iris nor in the pupil, and the only symptom still seen of affection of the eye, was a merely perceptible blush of red.

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ART. VIII. 1. *Mémoires sur L'Asphyxie, considerée dans les Batraciens; par M. Edwards, Docteur en Médecine.* (*Lu à l'Academie des Sciences le* 25 *Août,* 1817.) A Paris. 1817.

2. *Second Memoire sur L'Asphyxie, par M. Edwards, Docteur en Médecine.* (*Lu le* 1 *Juin,* 1818.)

THE Author of these Memoirs is probably known to those of our countrymen who have visited Paris, as one of the most zealous and scientific cultivators of our profession in that capital. Although his labours of late years have been exclusively devoted to the country in which he resides, we are proud to claim him as our countryman, and in that character we feel ourselves called upon to acknowledge the uniform kindness and polite attention which the English are in the habit of receiving from him.

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We feel no little pleasure in introducing these Memoirs to our readers; they appear to us extremely important, in a physiological point of view, and no less interesting in the talent for observation and skill in experiment which they display. As the author is still engaged in the prosecution of his subject, we shall strictly confine ourselves to an analytical review of these Memoirs, reserving our own remarks and observations to the period when the facts are all in the possession of our readers.

Dr. Edwards has been for some time engaged in researches into the nature of Asphyxia in cold blooded animals, preparatory to the consideration of that subject in man.

The phenomena which cold blooded animals present are so extraordinary, that, at first view, they do not seem to be governed by the same principles which regulate the functions of other animals. A closer observation of nature, however, will always satisfy us of the uniformity of her laws. The nature of Asphyxia in warm-blooded animals has been frequently the subject of experiment, but the phenomena which cold-blooded animals exhibit under similar circumstances, have seldom been made the subject of particular inquiry, although such an investigation must be confessed to be highly important, as tending to elucidate the nature of that state in man. It was with this view that Dr. Edwards undertook the present researches. He selected for this purpose the Batracian reptiles; the order comprehending frogs, toads, and salamanders. The less intimate dependence subsisting between the principal functions of these animals, enables us to observe, with greater facility, their mutual relations, as well as the operation of those external agents which influence their life.

Before entering on the immediate study of Asphyxia, it will be of importance to know if the *medium* in which it takes place exerts any action except that by the lungs. The singular modifications of life in reptiles, afford the means of determining this. They possess the wonderful property of retaining life, and the free use of sense and voluntary motion, after the excision of the heart, and, consequently, after the suspension of the functions of circulation and respiration; after this there only exists the united action of the nervous and muscular systems. It was on animals reduced to this state of simplicity of function, that the experiments which form the subject of the first Memoir were performed.

The media, whose influence it is of chief importance to appreciate, are air and water. By observing the difference in the duration of life, after the excision of the heart, in these two fluids, their respective influence upon the nervous and muscular

systems, independent of circulation and respiration, will be ascertained.

The first experiment performed by Dr. Edwards, with this view, was on salamanders. He cut out the hearts of four crested salamanders (S. Triton), two of which were exposed to the air, and two were put under an inverted jar, into water deprived of its air by ebullition. In both circumstances, the animals continued very lively for some time; their activity at length gradually diminished, though in different degrees. At the end of four hours, the salamanders which were in the water appeared to be dead, but manifested some signs of life on being pinched or agitated. One died at the end of eight, and the other at the end of nine hours. Those on the other hand, which were in the air, lived for twenty-four and twenty-six hours. This difference was confirmed by a repetition of the experiment upon these animals, and on frogs and toads. Six frogs, from which the heart had been removed, were placed in water, and an equal number in air. After the operation they leaped about with wonderful agility. Those in the water lived four hours, whilst those in the air lived an hour longer.

It is evident, from these experiments, that air is better fitted for supporting the action of the nervous and muscular system in these animals, than water; and that it exerts a vivifying influence on the economy of these animals, independent of respiration and circulation. This fact is rendered still more manifest by a modification of the experiment: if we remove the frog from the water into the air, after it has ceased to exhibit signs of life, it will revive, and set itself in motion; the contrary takes place if the steps of the operation are reversed—proving not only the more favourable operation of the air, but also the positively deleterious action of water deprived of that fluid, a fact which cannot fail to have important influence on Asphyxia from submersion in animals of a higher order.

Asphyxia is supposed to commence from the moment that the action of the air upon the blood is excluded; the only way in which it differs from the state to which the subjects of the preceding experiments were reduced, is, that to the action of the nervous and muscular systems is added the influence of the circulation of venous or black blood. It will, therefore, be necessary, as the first step in the proper study of Asphyxia, to determine what is the influence of the circulation of venous or black blood. This will be shewn by ascertaining the duration of life under the sole influence of the nervous and muscular systems, and comparing it with its duration under the combined influence of this action and that of the circulation of venous blood. The

hearts were cut out from six frogs, which were placed under a receiver in water, deprived of its air; an equal number, which underwent no operation, were similarly placed. The difference in these two cases was more than twenty hours in favour of the action of the circulation of black blood.

It was also found, as might have been expected, from refering to the first series of experiments, that the circulation of venous blood, when carried on in air, prolonged the action of the nervous and muscular systems to a greater period than when the Asphyxia took place in water. Six frogs were strangled by means of a piece of bladder placed over the head, and tied firmly round the neck with a thread, so as entirely to prevent the passage of the air. The immediate consequence was paralysis, but in a few minutes the animals recovered in some degree their powers. An equal number placed in water died in ten or twelve hours, whereas those that had been strangled lived from one to five days. One of them was so much alive at that period, that he effected his escape from his tormentors. The same results were obtained from experiments on salamanders. One of them was quite lively at the end of eleven days, though the head was then in a state of gangrene.

From this striking difference it would appear, either that these animals can exist for many days without any assistance from the air except its action on the nervous system, or that that fluid acts upon the blood through the medium of the skin.

Spallanzani concluded, that when the skin of animals is in contact with the air, carbonic acid is formed. His experiments, however, were liable to error; for being performed on reptiles whose hearts were cut out, the acid might have been the product of the contact of the air with the blood effused from the wound. Dr. Edwards and M. Chevillot got rid of this source of error, by operating on frogs and salamanders asphyxiated by strangulation, and obtained the same results as Spallanzani; from which they conclude, that the long time that reptiles are capable of living in air in a state of Asphyxia, is to be ascribed to the action of the air upon the skin.

The nature of this action, and other questions relating to it, are reserved by Dr. Edwards to a future stage of the inquiry, his present object being to determine the influence of black blood, independent of every external agent capable of producing chemical changes, or acting on the nervous system. The way in which this could be accomplished would, perhaps, be to inclose these animals in solid bodies. Experiments of this kind are on record. The famous one of Hérissant is well known. He inclosed three frogs in boxes, which he surrounded with

mortar, and deposited in the Academy of Sciences. When the boxes were opened, eighteen months afterwards, in presence of some of the members, one of the frogs was found dead, and the other two alive.

The fact in this instance could not be disputed, but it was attempted to be explained in the same way as the singular reports which gave rise to the experiment. These related to toads which were said to have been found alive, inclosed in old walls, blocks of coals, and even stones, where they had remained excluded from the air for an immense time. In both cases it was supposed that some crevice had escaped notice, which admitted the air, or enabled the animal to get out. Though it is not likely that such a circumstance would have escaped the notice of an accurate observer like Hérissant, it is certain that the circumstances of the experiment are not detailed with sufficient minuteness; on which account Dr. Edwards instituted the following modification of the experiment, in which no air was included with the animals, as appears to have been the case in Herissant's experiment.

Five wooden boxes, of particular dimensions, were half filled with mortar, upon the surface of which, in each box, he placed a toad, which he covered, and surrounded with mortar, so as to fill the boxes. They were then closed and secured. Five other toads were similarly treated, in circular pasteboard boxes, taking care that no fissure existed. The first five were placed under water, to compare the duration of life in that species of asphyxia, with that in mortar.

The experiment was made on the 24th of February, 1817, and at midnight of the same day, all the toads which had been immersed in the water were dead. Next day, at four o'clock P. M. one of the circular boxes was opened, and on removing the mortar from the animal, it moved briskly, and began to croak, being sixteen hours after the death of the others. To ascertain if the animal could exist much longer in this condition, it was replaced in the box, and the mortar applied with the same precautions as in the first instance. And on opening it on the 15th of March following, nineteen days from the commencement of the experiment, he was found quite alive. Results similar, but more striking, were obtained from experiments repeated on salamanders.

The fact established by these experiments, appears to be at variance with one of the indispensable laws of life; the necessity of air for its support. It would even appear that the interment was a means of prolonging their existence, for in several experi-

ments they lived much longer when thus situated, or in sand, than when confined in atmospheric air.

The next step of Dr. Edwards's researches was directed to the explanation of this apparently singular anomaly in the laws of life. It did not seem improbable that air might exist in sand, or penetrate through mortar, but it was extremely unlikely that it could exist in sufficient quantity to support life. But from some simple and decisive experiments which he performed, it was found that the air did actually enter very freely through the mortar, and that animals thus situated, speedily perished if they were surrounded with water, or mercury, so as to intercept the air. Thus what at first appeared a singular exception to the necessity of air for the support of life, became an additional proof of it. It is still, however, necessary to account for the greater prolongation of the life of reptiles, confined in solid bodies than in atmospheric air. This Dr. Edwards attributes to the difference in the loss sustained through transpiration, and evaporation, in these two circumstances. He performed several experiments to shew from the greater loss of weight of these animals, when confined in air than when imbedded in sand or mortar, that the transpiration must be greater, and that in these circumstances death must occur sooner, from the greater loss of the fluids, which cannot be repaired.

From this examination of asphyxia, in the family of the Batracian reptiles, as occurring in air, water, and solid bodies, the following are the most important of Dr. Edwards's conclusions:

1. That the air has an influence on the economy of these animals, independent of its action through respiration.

2. That air compared with water, exerts a vivifying influence upon the nervous and muscular system, while water has a contrary effect.

3. That the blood which has not been acted upon by the air prolongs life in these animals beyond the duration which it would attain under the action of the nervous and muscular system alone.

4. That these animals, deprived of the action of air upon the lungs, can exist much longer in that fluid than in water deprived of its air, and that in that case, when only the skin is in contact with the air, carbonic acid is formed.

5. That these animals can exist many days, buried in solid bodies, and that life in that case is supported by the air which penetrates through these bodies.

6. That they exist much longer confined in solid bodies than in air, which is owing to their sustaining a smaller loss by transpiration.

Such are the conclusions to which Dr. Edwards was led by the result of the foregoing experiments. But as in performing these experiments, there are some circumstances which tend to vary the results, it was necessary to appreciate the extent of the influence of these conditions, in order to obtain uniform results in repeating the same researches. The investigation of the causes capable of varying these effects, forms the subject of the Second Memoir, about to be published in the *Annales de Chimie et de Physique.*

In prosecuting this inquiry it was necessary to establish some fixed standard to be referred to, as a term of comparison, in subsequent experiments. With this view Dr. Edwards, in the months of July and September, 1816, performed forty-two experiments on frogs, in order to ascertain how long these animals could exist under water. The mean temperature of the month of July was 59° Fharn. that of September 57° Fharn. The temperature of the water made use of varied from 63° to 59°. The duration of life in these experiments varied from one hour, to two hours and 27 minutes. There was very little difference in the results obtained in these two months, the mean term of existence in July being one hour and 37 minutes, that in September one hour and 45 minutes.

In considering the causes capable of varying duration of life in frogs immersed in water, the first influence of which became the subject of investigation, was *temperature.*

It had been long ago remarked by Spallanzani and others, that frogs submersed in water retained life for a longer period in the winter season, than in summer. But as they have not made this fact the subject of particular investigation, Dr. Edwards undertook to elucidate it still farther, by experiments very similar to those already made, but whose chief object was to estimate the effects of temperature.

Two frogs were submersed in water which had been reduced, by means of ice, from the temperature of 62° to that of 50°. One lived 5 hours and 50 minutes; the other, 16 hours and 15 minutes; being double the term of existence in the 42 preceding experiments. Having then reduced the water to 32° eight frogs were plunged into it, which did not die till the end of 6 hours, 7 minutes; and 8 hours, 18 minutes; being more than triple the duration obtained in the first experiments, in which the temperature of the water was from 61° to 63°.

The duration of life in frogs immersed in water, being thus the inverse of the temperature, it would be interesting to observe the effects of increasing the temperature from 63°, the standard already adopted. The air being at 68°, four frogs were sub-

mersed in water, the temperature of which had been raised to 72°. They only lived 70, and 75 minutes. At the temperature of 90°, three frogs lived only 32, and 12 minutes; and at 108°, these animals suffer what may be termed sudden death, for in general they only live a few seconds.

These very opposite effects, produced by such inconsiderable differences of temperature, are extremely interesting. The circumstance of the temperature of 32° being peculiarly favourable to the existence of life, cannot be owing to the animals being reduced to a state of torpor; for at that temperature, they do not become torpid, as is evident from the movements they perform. The effect of temperature on the quantity of air contained in water, will be particularly examined hereafter. As the temperature of cold-blooded animals is known to differ very little from that of the surrounding medium, and to follow its variations, it may be asked, if the sudden change of temperature to which these animals are subjected, in plunging them into water at an elevated degree, is not the cause of their death, rather than the high temperature itself. If this supposition were correct, however, it ought to follow, that equally sudden transitions in the descending scale, should be equally injurious to life in these animals. The reverse of this, however, holds true. This circumstance therefore cannot satisfactorily account for the pernicious effect of the elevated temperature, but as connected with the influence of habit, it may tend to modify the results. Other considerations present themselves in the course of the investigation, as contributing to account for these effects; such as the influence of climate, the mode of living, the action of the air contained in the water, and its relations to the temperature, the effect of habit in relation to temperature, and the influence of the seasons of the year; each of which must exert peculiar and reciprocal actions. In order to be able to appreciate the relative influence of these different conditions, one of them only must be varied, whilst the other circumstances of the experiment are continued the same. In this manner, the effect of temperature has already been considered; and it is by proceeding in the same way, that the influence of additional causes is to be ascertained.

Amongst those conditions alluded to, the seasons, from their influence on the animal economy, merit particular attention. By repeating the preceding experiments at different times of the year, we shall be enabled to estimate what influence they exert.

It will be recollected, that in the months of July and September, frogs lived from 1 hour to 2 hours and 27 minutes

under water of the temperature of 59° and 63°. In order to determine how long they could live in the month of November, every other circumstance being similar, Dr. Edwards, on the 17th of November, 1817, placed ten frogs in water, the temperature of which had been raised to 63°, and maintained at that degree as in the experiments of July and September, the result was a duration of life from 2 hours and 6 minutes, to 5 hours and 35 minutes; being more than double the duration obtained in summer.

Having thus ascertained the manifest agency of the seasons; it is next to be enquired, under what view they are to be considered as producing this effect. A variety of circumstances, connected with the seasons of the year, may affect the animal economy, such as the temperature, the intensity of the light, the weight of the atmosphere, the degree of humidity, or dryness of the air, its state of agitation, and its electric condition. Of these atmospherical agencies, there are none without its influence; but as some of them are as yet not sufficiently appreciated, and there are others which can exert no operation in the present case, it will be necessary to distinguish that to which we are mainly to attribute the striking effect under consideration. This important agent, Dr. Edwards conceives to be temperature, not the *actual* temperature, but that which has for a certain period of time *preceded* the experiments.

The frogs, which were the subject of the experiments of July, were, during the preceding month, under the influence of a mean temperature of 57°; those of September, during the preceding month, to a temperature of 59°; an inconsiderable difference, and the results were not very dissimilar. But the frogs, which were asphyxiated in November, had been, during the preceding month, exposed to a much lower temperature, the mean of which was 45°; and the result was, that these animals lived double the time then that they did in summer, in water of the same temperature.

If we should be warranted in attributing this effect to the antecedent temperature, it would be establishing a most important principle in the operation of the seasons; and it would be interesting to know what change is wrought in the constitution of these animals, capable of thus influencing their existence. If it shall be found that the duration of life constantly corresponds with the antecedent changes of temperature in the air, we must necessarily refer these effects to that cause.

On the 23d of November, 1817, the water and air being at 50°, and the mean temperature of the month being nearly the same, five frogs were immersed in water of that temperature;

they lived from 5 hours, 10 minutes, to 11 hours, 40 minutes; being double the time they lived in water of the same temperature in summer. To ascertain if the influence of the antecedent temperature, increased in descending the scale to 32°, on the 22d of December, the air being at 32° for the twenty preceding days, three frogs were immersed in water at 50°. They lived from 20 to 24 hours. This striking result, when compared to that obtained in the experiments of summer and autumn, still farther proves the influence of antecedent temperature; and if the opinion adopted be correct, we shall obtain, from uniting the preceding temperature of the air at 32°, and that of the water also at 32°, a much greater difference of effect. To verify this conjecture, Dr. Edwards had recourse to the following experiment. On the 23d of December, the thermometer being at 32°, where it had stood from the beginning of the month, four frogs were put into water, the temperature of which was also at 32°. Under this new modification of circumstances, they lived from 24 to 60 hours.

In other experiments, Dr. Edwards found that the same limit of 108°, which proved fatal to frogs in summer, was equally so in every season, whatever the temperature may have been.

From these experiments Dr. Edwards concludes that the duration of life in frogs, plunged under water, is influenced by temperature in two ways: 1. By the temperature of that fluid itself, and 2. By the temperature of the air for a certain number of days previous to the experiment.

With regard to the temperature of the water, it results, that the limits of existence in that fluid are 32° and 108°., that within these limits the existence diminishes with the elevation of temperature, that the longest duration of life takes place at 32°, and that life is suddenly extinguished at 108°.

With regard to the influence of the antecedent temperature of the air, it would appear, that the nearer the season approaches to 32° for some time, the longer the life of these animals is supported under water between the temperatures of 63° and 32°; that the duration of life in these circumstances depends on the relation which exists between the temperature of the air during a certain time prior to the experiments, and that of the water during the experiment; and that the influence of these two conditions conjoined, is so much the greater as the temperature, in the one and the other case, is lower.

ART. IX. *Du couvercle des Branchies dans les poissons; et des quatre os correspondans du conduit auditif dans les animaux à respiration aérienne. Extrait abrégé du premier mémoire d'un ouvrage imprimé mais qui n'est pas encore publié et qui est intitulé "Philosophie Anatomique," ou l'organisation des animaux vertébrés ramenée à un type uniforme. Tome I. Dans lequel on traite des appareils osseux de l'organe respiratoire sous le rapport de l'identité de leurs matériaux. Par M. Geoffroi St. Hilaire, Membre de l'Institut de France, &c. &c. &c.*

(Communicated by the Author.)

NATURE constantly employs the same materials, and only displays her ingenuity in varying their forms. As if, in fact, she had been confined to certain primary data, we see her always bringing forward the same elements, in the same number, under the same circumstances, and with the same connexions. If one organ is found of an extraordinary size, the neighbouring parts are less developed; yet each of them is not the less preserved, although in a degree so minute, as frequently to render them almost useless. They become so many rudiments, which bear witness in some measure to the permanence of the general plan.

Such are the speculative views which I have adopted as a kind of principle *à priori*, in my investigations and discoveries. I have entertained them since 1807, as the reader may convince himself by the preceding passage, which I placed at the head of my work upon the cranium of birds. At that time I gave to the public a treatise upon the cranium. I wished to proceed as far as the cranium of fishes, but I got no farther in my first publication * than to that of crocodiles, and in my second † to that of birds. I attached myself particularly to birds, as forming the middle link in the scale of beings.

Commencing with birds, the most important of the oviparous animals, I saw throughout this whole class, the brain diminishing in size, and at last reduced in fishes to some scattered tubercles. I believed that a similar fact was true, or at least conjectured, that it was so of the osseous parts which cover the brain; and I thought that by prosecuting the enquiry, I might succeed in discovering the elements of the opercula ‡.

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* Annales du Musée. T. iv. p. 249. † Ibid. p. 342.

‡ The posterior parts of the maxillæ of fishes, especially of the upper. They are situated on both sides of the head, behind the eyes, closing the aperture of the gills, covering and defending the branchiæ, and sustaining the branchial membrane.—EDITOR.

These parts altogether useless in so small a cerebral cavity, might, instead of being entirely destroyed, be only transposed to the sides of the cranium, and there acquire functions appertaining to the mechanism of respiration.

When at length I came to the special consideration of fishes, I saw how difficult of attainment my object was. I had seized indeed some indications, which were of use in pointing out the road; but on publishing these results in a general way in the article *Tetradon,* in the great work upon Egypt, I felt that I ought to rest there, and wait till an opinion was formed in Europe, on the positions which I had advanced. New paths might be pointed out, and I had every thing to hope, in this interchange of ideas.

It was in France only that my labours excited attention; and the Academy of Sciences has not yet forgotten the pleasure afforded it three years ago, by the communication of M. Cuvier *, on the composition of the osseous part of the head, in vertrebral animals. The object of this Essay was to offer some considerations on the frontal, sphenoidal, and ethmoidal bones: views truly original, and highly interesting; and which I had neither perceived nor even contemplated.

M. Cuvier had seen the heads of fish formed of the same bones as in the first series, and that, without the bones of the operculum. Moreover, the bones of the operculum have evidently functions appertaining to respiration, and to a species of respiration, the only example of which is to be found in fishes. Hence, in the work of M. Cuvier, the names of *operculum,*

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* Our colleague M. Geoffroi, said M. Cuvier, in a lecture to the Academy of Sciences, presented to the Institute some years ago, a general work on the composition of the osseous head of vertebral animals, some detached parts of which, have, as yet, alone been published. It displays very ingenious research, and very happy results. To explain that multiplicity of bones found in the heads of reptiles, of fishes, and even of young birds, M. Geoffroi took the head of the fœtus of quadrupeds as a point of comparison. In this last, as every one knows, many of the bones which are afterwards united, are seen in a separate state; and he succeeded in reducing conormations, that a hasty and superficial observer would have considered very diversified, to a common law. Among other things he proved that all the parts of the temporal bone, with the exception of its petrous portion, are successively detached from the head; that the frame of the tympanum forms what is called the square bone, or the pedicule of the lower jaw in birds, reptiles, and fishes; that the beak of birds is almost entirely formed of the intermaxillary bones, and that the maxillary bones are reduced in size to a degree that could hardly have been conceived. In entirely adopting the discoveries of M. Geoffroi, relative to these metamorphoses, I thought I could still preserve a part of my views on the frontal, spheroidal, and ethmoidal bones.

*inter-operculum, sub-operculum, pre-operculum,* were given to the four opercular bones then known. We shall find hereafter that there is another, and that a fifth does really exist. M. de Blainville equally struck with my early *présentimens* on the subject, and with the results obtained by M. Cuvier, conceived that it was possible to reconcile our views. Judging from analogy, it appeared to me that these opercular bones could not be organs created for a single class of beings, and intended for fishes alone: and the work of M. Cuvier taught, or at least admitted, that no separation, *(démembrement,)* of the cranium could produce them.

In this state of the case, M. de Blainville resolved to apply to fishes, the ideas of Hérissant upon birds; and discovered the solution of the problem which he had proposed to himself, in the possibility of the separation of the lower jaw. The crocodile furnished a very favourable example for this notion. The hinder branch of the lower jaw is composed of several distinct bones, in which an analogy to the opercular bones may be traced. This moreover seems to be confirmed by a certain coincidence in their relative situation. Trusting entirely to his authority, I did not question the truth of these opinions.

I had, however, already attacked the conclusions of Hérissant with regard to birds, and had demonstrated that the "*os carré* *." called by Schreider intermaxillary, because it is placed between the two jaws, which it serves to unite, was not derived from the lower one. This remained entire; and the part in question was the frame of the tympanum, articulated with the cranium, by diarthrosis. In reading this Memoir to the Academy of Sciences, on the 10th of June last, I contented myself with stating that the lower jaws of fishes are not more susceptible of division than those of birds, and that they are equally formed of double portions. I had founded this observation on a preparation of the lower jaw of the esox osseus †, preserved in the cabinet of M. Cuvier. In it are found all the pieces of the posterior portion, in the same number, in the same relation, and at similar relative distances as in the crocodile. The observation of this preparation brought me back to my former researches.

In thus adopting the views of M. Cuvier, and accommodating my original opinions to them, there is still a point of the greatest importance in the investigation, in which I cannot agree with

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* "Os carré" is termed intermaxillary bone by Blumenbach, (os intermaxillare.) It occurs in most of the monkies, and bears the incisor teeth. EDITOR.

† The modern name is lepisosteus osseus, *Cuvier.*—EDITOR.

my learned colleague. The position which he has advanced with respect to fishes, first of the temporal bone, and its connections, and secondly of the opercular bones. I call the temporal bone that which this great anatomist designates under the name of case *. I propose this change upon a principle which has been of great utility to us both, that of the order of the connections. The presence of the jugal † before, is an indication that the temporal is immediately behind. Besides, the latter is always articulated with the case, and the tympanal ‡, or frame of the tympanum. Now the bone which I consider as the temporal in fishes, is in a position to preserve all its connections, having the jugal anteriorly, the case above, and the tympanal posteriorly, and a little outwards.

To these motives for so placing the tympanal, may be added the following; it is the thinnest bone in this region, and it exhibits the attachments of the temporal muscles. It is so clearly the temporal bone that its concavity is in direct proportion to the volume of the muscle.

On the other side, this arrangement restores the case to the situation in which I think it ought to be, that is, between the temporal, the mastoid, and the tympanal. And this explains every circumstance as in the mammalia. No more anomaly; all is faithful to the order of the connections. It is true that the temporal wing, instead of being, as it were drawn up in a ball, and folded upon itself, is composed of detached, exposed, and compressed parts. These circumstances, if we were to take the anatomy of man, as our point of comparison, would be regarded as having influenced the arrangement of the four ossicula of the ear, in such a manner as to make them in fishes, flattened and subservient to the functions of the opercula; at all events, however, this influence is not extended far enough to affect the relative position of the bones. In respect to their connection, they present the following considerations.

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* "Caisse," a term applied by Cuvier to that part of the temporal of man (which is separate from the temporal in fishes and many reptiles,) which contains the bones of the ear. This bone is separate in man, in the young state, but is in after life united to the temporal, and seems to form one bone.—Editor.

† The "jugal" is that bone that is separate in the young state, and unites the maxillary with the temporal bone. In man it forms the zygomatic process or zygoma.—Editor.

‡ "Tympanal" is that part of the temporal bone that is separate in fishes, and contains, or rather supports the tympanum. Cadre du tympanum is a part of the tympanal bone.—Editor.

I compare the opercula of fishes to the four ossicula of the tympanum in man. Their character and form are familiar to every one. They never differ in point of number, and only in a very trifling degree, in point of form, particularly as it respects the mammalia. The malleus is placed a little laterally; while the stapes, the lenticulare, and the incus, more particularly form a chain, to which the maleus is joined only towards the upper part by its great tuberosity.

Now, the arrangement of the opercular bones is precisely similar. The malleus in fishes corresponding with the inter-operculum, is thrown to one side: lodged under the tympanal, it forms posteriorly an irregular surface, which extends to the chain of the other three bones of the operculum. It is articulated by diarthrosis with the angular portion of the bone which occupies the middle of this chain, and which forms the first part of the sub-operculum. The appearance of this portion, its size, and formation, presenting a considerable resemblance to the processes and proportions of the incus, determined me at first, to give it this name. But the imperious law of connection, in the theory that the four bones of tympanum correspond to the four bones of the operculum, mark it as the lenticulare.

At the inferior side of the opercular cavity, forming the second portion of the sub-operculum, there is a small, thin, elongated bone, which soon becomes incorporated with the superior portion. It appears in an equivocal and rudimentary state. My investigations have not been sufficiently extensive to enable me to say whether it exists in all, or only in some young subjects. This is the portion which I regard as the incus.

We must confess that at first sight, this decision is not very satisfactory; especially if we call to mind the rank, the size, and the use of the incus in man. But undoubtedly this is the conclusion to which we must be led after studying the tympanum in birds; which class, in this respect, as in every other, bears the closest resemblance to fishes.

After having examined these three bones of the opercular cavity, we find still another portion to which the name of operculum proper has been given. This is the stapes. It is produced by the union of three osseous spiculæ in form of a triangle or stirrup, the centre of which is empty; and the middle occupied by a very thin osseous expansion in fishes. The same connections establish the identity of the stapes and the operculum. The stapes is not without its connections to the lenticulare and the membrana tympani. Thus in the mammalia it is depressed to meet the membrane at the bottom of the

auditory canal, and in fishes it is elevated towards the *rocher* * and the *mastoid bone* to meet with it in that situation. The malleus and the incus were the only ossiculæ, which, as yet, have been attributed to birds and reptiles. I wished to restore this conformation to that of the mammalia; and my plates prove that in this point I had demonstrated the unity of structure in all vertebral animals. Neither the malleus nor the incus show these great tuberosities, (which are at best but small heads) nor number of apophises, in which the imagination of some, who were led away by theoretical ideas, sought to find the representation of those instruments of which these two portions bear the name.

In oviparous animals the malleus rests on the membrana tympani, and there forms a radius of a circle, one extremity of which rests on the tympanal, or the frame of the tympanum, and the other in the centre, furnishing an articular head for the incus. The latter is an osseous net, the dimension of which varies according to the distance of the *meatus auditorii*. In the great sea-turtle it is two inches long. It is also about an inch in length in the immense serpents of the genus Boa. On the contrary, in those animals where the menbrana tympani nearly approximates to the auditory cells it is very short, and in truth, is in a rudimentary state.

The os lenticulare, which in man, and the mammalia is so small, that some anatomists have altogether doubted its existence; and which in the rudimentary state in which it is found in this class of animals, has no other use than to facilitate the movements of the stapes on the incus, becomes in oviparous animals a part of much greater importance. It is a large plate, which replaces the stapes in its functions, serving as a door or sucker to the most external of the deep openings of the chamber of hearing. This plate is divided by the incus, which is subordinate to it, and serves as its handle. We find these pieces separated only in very young subjects.

The stapes is, nevertheless, found in birds and reptiles. It lies beyond it, enveloped in one of the auditory cells; and in night birds, enclosed in a real cell. It exists there incapable of perfecting itself, or of passing into the second state of bone; remaining always cartilaginous. It continues in such a state of isolation, that we hardly know what function to assign it. In the owl it resembles a boot-jack; and in the crocodile it assumes the curve of the cell which contains it: nevertheless, in these

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* Rocher is a separate bone in fishes. In mammalia it forms the petrous portion of the temporal bone.—EDITOR.

two examples the lenticulare reaches only one of its two branches. A similar arrangement may be observed in fishes.

It is by judging of the different proportions of the incus and lenticulare in mammalia on the one part, and in birds and reptiles on the other, that I have with some security been able to follow the course described by the principle of connection. In birds and reptiles the incus is the variable bone, and which, according to circumstances, changes its original situation. The os lenticulare on the contrary enlarges, and acquires peculiar functions. By following these two portions progressively, in fishes, the growth of the os lenticulare really appears surprizing.

When the ossicula of the ear were first observed, and names were assigned them, comparative anatomy and physiology were unknown. Observation was confined to physicians and surgeons, who were unable to devote their time to scientific investigations ; and to man alone, their whole attention was devoted. They saw the end, and explained satisfactorily enough the functions of most organs. They even thought that all organs were privileged, and possessed a certain utility, either demonstrated, or to be discovered ; and the result was, the principle which has since been so ridiculously abused, that nature makes nothing in vain. In this state of things, the ossicula of the ear were discovered. A miracle was proclaimed! Seeing so many instruments at the bottom of the auditory canal, the principle of acoustics was immediately to be discovered! The membrana tympani was by its vibrations to agitate the malleus, the stapes receiving a commotion from it was at the bottom of the canal to stir up the sluggishness of the organ! How many fine things have appeared plausible, and been admitted on hearsay evidence? In order however to credit the eminent utility of these bones in hearing, we ought to find them larger in those animals endued with greater sensibility of hearing; and this is not the case. For example, fishes hear exquisitely, as is attested by the fact that in fish-ponds they sometimes use bells to collect them together when they are fed, and by the circumstance that it is upon the most rigorous silence that the hopes of all sportsmen are founded, and yet fishes do not possess these ossicula. In place of them, however, they have that apparatus which we have been describing, and this gives acuteness to the sense, at the bottom of the auditory cells. We see another illustration in birds. They enjoy delicate hearing, as is proved by their repeating musical sounds with as much taste as precision, and yet they possess the apparatus in a more rudimentary state than the mammalia.

If the four ossicula of the ear vary in form, consistence, and dimension, without influencing the perfection in hearing, what are we to conclude? The truth is, that in the mammalia, birds, and reptiles, they are a sort of superfluity. They are more considerable indeed in subjects with a large brain, because in them the temporal bone is large, and the auditory canal is broad and deep. They are mere rudimentary relics simply indicative of an organization, which in another class is absolutely necessary and fully developed.

Nevertheless, the ear derives some advantage from them. The stapes resting upon the fenestrum ovale, presents a surface that keeps it shut. The malleus and the stapes, put in motion by their appropriate muscles, (muscles analogous to those of the opercular cavity) excite the ear. The malleus produces a state of tension in the membrana tympani, and the stapes exerts an action on the labyrinth. These however are services of very secondary importance.

Speaking generally then, these bones must be regarded as the opercular bones. When not required to act as organs of respiration, they are not suddenly annihilated, but become insignificant; they become the mere rudiments of bones, and shut up in the cavity of hearing, are still made serviceable in their new condition. They are tools now used merely in a secondary employment. We observe a parallel to all this in the tail of quadrupeds. In fishes, it is fully developed; while in the other class, though in a less perfect state, it serves a useful purpose. To the apes of Africa and India (cercopithecus) it is merely an embarrassing appendix; but to those of America (atelēs) it is a fifth hand. In the bat, we see it supporting a part of its drapery; in the lion, it is an instrument of vengeance; in the kangaroo, a leaping-pole; a shield to the manis; an umbrella to the squirrel; a trowel to the beaver; and a defence against flies in the horse.

Whence arises all this metamorphosis, and all this variety of form? From nature herself: she has assigned to the elementary organs the duty of assuming various combinations, of acting as if they were instruments out of use. She has laid them aside with such ingenuity, that they may be ready for every call.

# ANALECTA.

### 1. *Pathology of the Heart.*

Corvisart, in his excellent work, " Sur les Maladies et les Lésions Organiques du cœur, &c. &c." was the first who has afforded us any thing like a satisfactory account of the organic derangements to which the heart is liable. The chapters which are occupied with describing the aneurisms of this organ are not the least interesting. The names which he has given of active and passive aneurism, we think decidedly objectionable. In the following notice we shall make use of the term enlargement.

It will be remembered, that the learned author states that enlargement with thickness generally takes place in the left ventricle; most frequently occurs in the young and strong; in those who have a sanguine temperament, who engage in manly exercises, and are subject to violent passions. He mentions the symptoms to be redness of the face, violent beating of the heart, discernible to the eye and hand; throbbing of the carotids, and a strong, hard, and vibrating pulse.

A very interesting paper has appeared in the Nouveau Journal de Médecine pour Avril proving, from many facts, confirmed by dissection, that the disease is most apt to occur in the old, feeble and infirm; and is attended with all the signs of debility, with a livid face, with an irregular, small, soft, and easily compressed pulse.

The observations alluded to were made in La Salpétrière, by M. Rostan, and seem well entitled to attention. They induced him to investigate the cause of the disease, and he was led to the following conclusions: that dilatation, with thickening of the parietes of the heart, is not the result of great power or strength of constitution, with activity of healthy action; but is generally caused by that state of the arteries, which is the invariable result of old age; in which they lose their natural elasticity, and become ossified, thick, inorganic tubes. This ossification, as is well known, affects the valves of the heart as well as the vessels in its neighbourhood, and it is from these causes that the heart is gradually called upon for increased action. The obstruction to the current of blood causes the increased thickness of the parietes.

A similar obstruction in the pulmonary system, in the same way, induces the same state of parts in the left ventricle. The author cites the authority of M M. Bayle and Judelat in confirmation of this fact.

The conclusions appear equally just and ingenious; and we have little hesitation in declaring our belief, that they account for the many interesting cases which have fallen under the observation of M. Rostan at La Salpétrière. The observations throw much light on

one important variety of the disease. Do they account for all the cases which may occur?

The paper itself merits a perusal. See Nouveau Journal de Médecine, &c. Tom. 1. p. 367.

### 2. *Diseased Brain.*

We are not aware that the following state of diseased brain has been hitherto described, or is frequently met with. "The brain when cut, exposed in different parts of its substance thirty or forty little round bodies, resembling the crystalline humour of the eye, in colour, volume, and consistence. Two similar appearances were observed in the cerebellum, and one at the upper part of the spinal cord. Many little abscesses of the same size as these bodies, and which appeared to be produced by their advancement, were also found in the different parts of the encephalon."

The subject in whom these appearances presented themselves was a woman of thirty years of age. For nearly two years she was subject to obstinate vomiting; frequently every thing was rejected by the stomach. These symptoms principally excited the attention of the physician. They were however preceded and accompanied with head-ache and giddiness, especially on sitting up. In fact she was always forced to lie in the horizontal posture. Her sleep was much disturbed.—*Nouveau Journal de Médecine, tom. I.* p. 192, *par M. Chomel.*

### 3. *Puerperal Mania.*

M. Esquirol has lately read a paper on this subject to the "Société de Médecine," and gives the following results of observations made in the hospital de la Salpêtrière.

1st. During the years 1811, 12, 13, 14, eleven hundred and nineteen women labouring under mental derangement were admitted into the hospital. Of this number 92 had become deranged after delivery, during or immediately subsequent to the period of suckling, giving therefore a proportion of 1 to 12. In the higher ranks of society this proportion is a seventh. 2d. Of these 92, 16 cases occurred from the 1st to the 4th day after delivery; 21 from the 5th to the 15th day; 17 from the 16th to the 60th day; 19 from the 60th day to the 12th month of suckling, and in 19 cases, it appeared after voluntary or forced weaning. From these facts M. Esquirol concludes that mental derangement occurs more frequently as the consequence of delivery than of nursing, and that the more distant the time at which it occurs is from the period of delivery, the less it is to be feared. 3d. Of these 92 cases, 8 were idiotical, 35 melancholic, and 49 maniacal. 4th. The ages of these numbers were as follows: 22 from 20 to 25 years; 41 from 25 to 30 years; and 12 were upwards of 40. Therefore neither delivery nor suckling modify derangement as

far as age is concerned, for in this disease, produced by other circumstances, it most frequently occurs between the ages of 30 and 35. 5th. 63 of the cases were married women, 29 single. 6th. The *moral* causes of this disease bear a proportion of 4 to 1 to the *physical*, 14 only of the 92 were produced by physical causes, and of these 10 had been exposed to cold and damp. Of the moral causes fright was the most common, as repeatedly evinced in 1814, and 15. 7th. The proportion of cures is very remarkable, 56 out of the 92 were entirely restored. 8th. In these 55 cases, 4 were cured in the 1st month, 7 in the 2d, 6 in the 3d, 7 in the 4th, 5 in the 5th, 9 in the 6th, 15 in the following months, and 2 after the lapse of 2 years, so that 38 were cured in the 6 first months.

The mortality is very small, for of these 92 cases occurring in a space of 4 years, only 6 died. One 6 months after the attack of the disease, 1 after the lapse of a year, 2 after 18 months, 1 after 3 years, and 1 after 5 years had elapsed. The appearances on dissection threw no light on the disease. These cases were treated by mild continued purgatives, by blisters to the nape of the neck and the limbs, purgative injections and baths. Bleeding was seldom indicated.

### 4. *Displacement of the Transverse Colon in Mental Diseases.*

Both the ancients and moderns, who have treated of mental diseases, especially of melancholy, have constantly spoken of certain organic affections of the abdominal viscera. None of them have noticed displacement of the transverse colon. Yet, according to M. Esquirol of Paris, such displacement is very frequently found in the dead bodies of those who have been in a state of mental derangement. Sometimes its direction is oblique, at other times it is perpendicular, so that its sinistral extremity lies behind the pubis. In some cases the transverse colon descends in form of an inverted arch, even below the pubis, and into the pelvis. This displacement cannot be attributed to a mechanical cause depending upon thickening of the parietes of the colon, nor to an accumulation of fœcal matter in its cavity; for in the greater number of subjects examined by M. Esquirol the colon was empty; and in all, its texture was healthy. Nor does it appear that this displacement is the effect of the last illness of the patient; for it has been found in individuals who have died of very different diseases. The patients, particularly those of them affected by melancholy, in whom this displacement is found, frequently complain of pain in the epigastrium. They compare the pain to what would arise from a tight cord surrounding the body at the height of the hypochrondria. The bowels are in general disordered. M. Esquirol is led from these observations to recommend the use of such remedies as may act as tonics upon the bowels, in cases of melancholy; and attributes the good effects of sea-voyages, and of exercise on horseback, in such cases, to their fortifying the abdominal viscera.

### 5. *Use of Ice in Mania.*

Dr. Busser of Wohlau, in support of the good effects of the application of ice to the head in mania, relates the case of a lady attacked with this disease on the seventh day after delivery, and was cured by the application of ice in a bladder to the shaved head for six or eight minutes several times a day. In another case of a man who had been for upwards of six months in a state of mania, as an empirical remedy ice was applied to the head twice a day, for half an hour at a time, and continued for eight days. The consequence was, that the man lost his sleep, which had returned by the use of belladonna. Dr. Newbek concludes from this, that it is only in cases of turgescence of the blood vessels of the brain, and at the commencement of the disease that benefit is to be expected from the application of ice, and the use of antiphlogistic means in general.

### 6. *Use of Mare's Milk in Tænia.*

The German physicians have lately remarked beneficial effects from mare's milk in cases of tænia. Dr. Kortum of Stalberg relates the following case in Hufeland's Journal. A lady between thirty and forty years of age had long suffered from tænia, and several attempts to remove it had failed, owing to the patient's great dislike to medicines, which caused every thing of this kind to be instantly rejected by vomiting. Having heard of several individuals that were cured by simply drinking fresh drawn mare's milk morning and evening, she resolved to give it a trial. Having an opportunity in autumn she drank two cups in the evening. Soon afterwards violent pains commenced in her bowels, and continued dreadfully severe during almost the whole night. In the morning however she took one cup more, after which pains in her bowels followed, but much less severe than before. In a few days a long piece of dead, and partly putrid tænia was discharged, and in a short time afterwards another piece with the narrow tapering end of the worm, and with this all the symptoms ceased. This peculiarity of mare's milk is the more remarkable, as that of the cow seems to be agreeable to the worm, and on being drank merely alleviates the symptoms.

### 7. *Use of the Moxa and actual Cautery in Rheumatism.*

Professor Weinhold of Halle, has found the moxa and actual cautery of essential service in curing rheumatic affections. A case of spasmodic closure of the eyelids which had resisted all other remedies, disappeared three days after the application of the moxa; and a rheumatic stiffness of the right arm was cured in seven days after the use of the actual cautery.

### 8. *Use of the Rhododendrum ferrugineum in Rheumatical Palsy.*

In a case of palsy of the lower extremities which succeeded an attack of rheumatism, Dr. Herman gave the rhododendrum ferrugi-

neum with great success. It was taken in the form of powder in doses of five grains three times a day, increased gradually to thirty-five grains each dose. Universal perspiration followed, and a twitching sensation in the paralysed limbs, after which the power of motion gradually returned.

### 9. *Fragility of the Bones.*

It is stated by the French surgeons, that this affection is a symptom of some constitutional diseases, as, for example, of scurvy, lues, and cancer. The latter affection especially, has been thought frequently to produce it; and the connection between the two diseases is singular, and merits attention. Boyer mentions a case of this sort, in which the arm was broken from merely lifting the individual from the ground. Deschamps mentions a case, in which the Femur was fractured from violent convulsions while the surgeon was a by-stander. Other cases of this sort are reported by Desault, Saviard, &c. A case of this kind occurred at the commencement of the present year, in the Salpêtrière of Paris. The patient was a woman, aged 50. She had for a considerable time laboured under cancer of the mamma, and had long been the victim of epilepsy. M. Rostan reports, that one night the convulsions were so violent as to rupture the thigh bone. The woman died shortly afterwards, and the fractured limb was accurately examined.—Nouveau Journal de Médecine, Tom. 1. p. 138.

### 10. *Aneurism by Anastomosis of the Lobe of the Ear.*

A young man, aged 25 years, was admitted into the Hôtel-Dieu, of Paris, a few months ago. He was affected with aneurism by anastomosis of the lobe of the right ear. The whole lobe participated in the disease, was rapidly increasing, and had enlarged to more than double the natural size. M. Dupuytren tied the external carotid of the same side, and this for a time was followed with manifest advantage. The tumour gradually and considerably diminished in size. After a time however, it became stationary, and soon began to enlarge again. It appeared to M. Dupuytren (as he stated in his *Clinic)* that pressure was the most proper method to oppose its growth. He one morning, therefore, confined and surrounded the ear with plaster of Paris. He hoped that this in hardening might contract, and thus compress the ear; at all events, he imagined, that a body so solid would prevent the further increase of the disease. In this, however, he was disappointed. From its size the application was exceedingly inconvenient; it moreover gave great pain and uneasiness, so as entirely to prevent the patient from getting sleep. In a few days, therefore, he was obliged to remove it.

After this he adopted a much better plan; and invented a truly ingenious piece of mechanism. It was constructed on the principle of a common truss; the spring going over the head from ear to ear. The pad compressed the diseased ear. On the inner side of the pad were a pair of cases, made to hold the ear. They were of

the shape of the ear, and appeared like two separate ears tied together with a number of tapes. It was not necessary, on every application, to untie the whole of them; and if those on the back part were left fastened, they acted as a hinge, and the case opened. It could then be nicely padded, and the ear most accurately and comfortably compressed. Over the ear thus tied up, the pad was applied, and made to press with whatever degree of firmness was deemed desirable. It was easily kept in its position, by straps going round the head, behind and before. Under this well regulated pressure, the tumour quickly subsided.

### 11. *A new vegetable Alkali.*

In analysing the St. Ignatius's bean, and the nux vomica, MM. Pelletier and Caventon have lately discovered the active principle of these substances. On the 1st August this interesting discovery was made known to the Philomathic Society, and on the 10th of the same month officially communicated to the Institute.

The following are the principal properties of this new substance. It is white, inodorous, and of an insupportable bitterness; crystallizes in four sided prisms, terminated by four sided elliptical pyramids, is soluble in alcohol, but not very soluble in water or æther. Distilled in close vessels it melts, blackens, becomes decomposed, and gives all the products of non-azoted vegetable matters The analysis has been made by means of the deutoxide of copper, and only water and carbonic acid were obtained, which confirms the preceding results. It exerts no action on the curcuma, gives a green colour to the vegetable blues, and restores the blue to paper which has been reddened by an acid. It dissolves very quickly in acids, saturates them, and forms with them neutral salts, which are more or less easily chrystallizable. Weak nitric acid dissolves without altering it, but a concentrated acid imparts to this substance a blood red colour. When the action is continued, the solution becomes yellow, and leaves a product of oxalic acid.

These combinations are less bitter than the substance itself, their action upon animals is at least as strong as that of the alkali.

This substance exerts a very energetic, even dreadful effect upon the animal economy. This action is the same as that of the nux vomica, and the St. Ignatius's bean, that is to say, it produces tetanus, but in much shorter time, and in much weaker doses; cæteris paribus, half a grain is sufficient to kill, in the space of a few minutes, the rabbit, the dog, or the cat, applied either externally or internally.

The class of vegetable acid substances is numerous: that on the other hand of vegetable alkaline substances seems at present to be confined to morphine; but M. Vauquelin had remarked alkaline properties in a substance discovered by him in analysing the *daphne alpina*. In order to recall the remembrance of these facts, MM. Pelletier and Caventon have called their alkali, Vauqueline, in honour of that celebrated chemist, who was the first to discover this new class of substances, of which the product of the daphne, the morphine, and the Vauqueline, will form the three first genera.

### 12. *The Nature of Malic Acid.*

M. Braconot has determined by numerous experiments, that the malic acid of Scheele is composed of at least two substances; of sorbic acid, and of an abundant mucous matter, which does not always appear the same. This matter appears to him to hold a middle place between gum and sugar; it is insoluble in alcohol: it has such an effect in disguising the combinations formed by sorbic acid, that if mixed with a solution of this acid, and if to this mixture acetate of lead be added, no indication of sorbate of lead appears. Most careful experiments, says M. Braconot, ought to be instituted on that crowd of impure acids known by the name of malic acid. The probability is that sorbic acid will be found in them, or perhaps some new acids disguised by this mucous principle. (Mémoire lu à l'academie des Sciences de Nancy, 11 Juin Annales de Chimie et de Physique).

### 13. *New Method of preparing Extracts.*

Dr. Rehman, of St. Petersburg, in the Saltzburg Med. Literat. Zeitung, No. 22, 1818, communicates the following method of making extracts by Professor Janish of Moscow, and pledges the efficacy of those so prepared. The expressed juice of vegetables is to be put in a dish which is to be placed under the receiver of the air pump, over this is to be placed another containing well burnt muriate of lime, and so on several alternate layers. As the air is exhausted, the water evaporates and is immediately re-absorbed by the lime, leaving the dry extract unchanged. The temperature employed in the preparation should not exceed 14° Reaumur.

Professor Janish has made some alterations in the air pump to make it answer his purpose better, among others a contrivance by which the evaporated fluid collects in a recipient surrounded with ice. Extracts thus prepared, rubbed down with twelve parts of water, exhibit the juice of vegetables with all their properties.

Dr. Rehman proposes that Real's method should be conjoined with this; that the fluid extracts obtained by Real's press-machine should be exposed to evaporation as above described. By this he supposes that the dry extracts so obtained would contain all the essential ingredients of the plants used in medicine, and that in the most concentrated form.

### 14. *The Preparation of the Extract of Hemlock.*

The cases of cancer and other diseases published by Stoerk in his *Libelli tres de Cicuta*, are seldom mentioned at the present day but to be doubted, or even hardily denied. We are much inclined however to believe, that hemlock is possessed of powers much beyond what is generally acknowledged by modern practitioners, and that it would be necessary only to take proper pains in the preparation of the medicine, and then to exhibit it with care to be convinced of this fact.

M. Orfila has been led in the course of his experiments upon poisons to ascertain the comparative effects of the extract of hemlock properly prepared, and of that which is usually sold in the shops. He found that a dram was sufficient to poison a dog if he employed the extract prepared by himself, whereas an ounce, and even ten drams from several of the shops produced no effect whatever.

In preparing his extract, M. Orfila proceeds in the following manner, and these rules are applicable to other extracts of the same kind.

1. The plant must be taken when in full vegetation, and the flowers completely developed. Dried leaves treated with water are perfectly useless.

2. The juice is to be expressed, if the plant be succulent. If it be not succulent, water must be added, and then expression employed. In both cases, expression is to be made without heat.

3. The juice thus obtained is to be evaporated by a gentle heat, in a very broad vessel, and in a water-bath. By using a water-bath, the juice can never be brought to ebullition.

When thus prepared, the extract of hemlock is of a gold-yellow, and slightly reddish colour, whereas in the shops it is usually a black substance which is sold under that name. We are happy to learn that since the publication of M. Orfila's work on Toxicology, a number of the shops in Paris have adopted the above described manner of preparing this extract. It were much to be wished, that a series of accurate experiments upon the effects of hemlock in cases of cancerous and malignant ulcers were made with the extract thus prepared.

### 15. *Pathology of Domestic Animals.*

An interesting work has lately been published in Paris upon this subject by M. Dupuy, one of the professors of the Veterinary School of Alfort. It is entitled, *De l'Affection tuberculeuse, vulgairement appellée Morve, Pulmonie, Gourme, Farcin, Fausse Gourme, Pommilière, Phthisie du Singe, du Chat, du Chien, et des Oiseaux domestiques, comparée à l'Affection hydatideuse ou Pourriture du Mouton, du Lapin, du Lievre, et à la Ladrerie du Cochon.* In the first part of the work, which is historical, M. Dupuy proves that glanders were known in the time of the Greeks, and gives an account of the ridiculous causes to which they attributed the disease. One of the principal facts established by M. Dupuy is, that there are two distinct species of glanders, the one acute and the other chronic. The acute glanders, which is the more rare, appears to be a kind of typhus fever, attended by malignant pustule or gangrenous eschar in the nostrils. It has no other relation to the chronic glanders than through the improper name which some authors have bestowed upon it; and ought to rank among the epidemic and contagious fevers. The chronic glanders insensibly developes itself in the form of tubercles upon the nasal membrane, in the bronchias, the different sinuees, the sublingual glands, the parenchyma of the lungs and liver, in the tes-

ticles, and even in the subcutaneous cellular substance. These tubercles pass successively through different states similar to schirrus and cancer, produce caries of the bones of the nasal fossae, and attack a greater or less number of organs before proving mortal. This disease evidently appears to be analogous to the tuberculous phthisis of man. The horses most liable to its attacks are such as are exposed to a northern climate, live in cold and damp situations, are served with damaged fodder, or have suffered from dearth. In certain circumstances, the causes of glanders have acted so promptly, and with such energy upon a great number of horses, that this disease may be regarded as epidemic; yet it would appear that even in these cases it was against the supposed contagion of this disease, that the precautions of the owners and of others were directed. M. Dupuy mentions precise, numerous, and various experiments, which appear to prove that the disease cannot be communicated in a direct manner from one individual to another. He has put a healthy horse along with one affected with the worst symptoms of glanders, they have wrought, drank, eat, and been stabled together for eight months, and yet the healthy horse has remained free from any attack. It is probable that the experiments of the same kind, which for a year past have been carrying on under the inspection of the professors of the school at Alfort, will throw an additional light upon the important question of the contagious nature of glanders. The work of M. Dupuy may well serve as a guide to those interested in such inquiries. It clears up many doubts; it raises many. It is written in a spirit comformable to the scientific improvements of the age; and forms a valuable collection of observations intimately connected with pathological anatomy.

## NOTICE TO CORRESPONDENTS.

All Communications from our friends abroad, or Foreign Works intended for Review, are requested to be left, addressed to us, at Messrs. Treuttell and Wurtz, Paris and Strasburgh, or Messrs. Rivingtons, London.

In answer to enquiries that have been made, all works relating to Foreign Medical Science, published in this country, come within our plan, and will be received for Review.

## ERRATUM.

Page 64, *instead of* line 16, *read,* by injecting these vessels in fœtuses, in young subjects, and in adults.

# QUARTERLY LIST OF NEW PUBLICATIONS.

## ANATOMY AND PHYSIOLOGY.

Albers, Icones ad illustrandam anatomiam comparatam. Lipsiæ.

Bichat, Anatomie Générale, précédée des recherches physiologiques sur la Vie et la Mort, avec des Notes par M. Maingault, nouvelle édition. 2 tomes. 8vo. Paris.

Bendach, K. F. Berichte, v. d. K. Anatom. Anstalt zu Königsberg. Leipzig.

Choulant, Dr. T. L. Decas pelvium spinarumque deformatarum. Lipsiæ.

Gall, Anatomie et Physiologie du Système Nerveux en général et du Cerveau en particulier, Tom. III. Part I. in 4to, avec 12 planches in folio. Paris.

Lenhossek, Physiologia medicinalis. 5 vols. Pestini.

Meckel, Tabulæ Anatomico-Pathologicæ, modos omnes quibus partium humani corporis omnium forma externa atque interna a norma recedit, exhibentes. Fasciculus I. Cor, cum Tab. VIII. Folio. Lipsiæ.

Mekel's Handbuch der pathologischen Anatomie. 2ter Band. Leipzig.

Rosenthal, Handbuch der Chirurgischen Anatomie. Berlin.

Scherer, Tabulæ Anatomicæ quæ exhibent Musæi anatomici Acad. Josephinæ præparata cerea. Tom. 2. Vindobonæ.

Wedemeyer Physiologische Untersuchungen. Hannover.

Wutzer De corporis humanì Gangliorum fabrica atque usu. Berolini.

## BOTANY.

L'Herbier général de l'amateur par feu Mordant de Lannay, continué par M. Laisleur de Longchamps, avec fig. peintes d'après nature, par Bessa. Dela 23 à l 30 Livraison. Paris.

Flore du Dict. des Sciences Médicales, Livraison LII—LXIV. Paris.

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## CONTENTS.

## NOTICE TO CORRESPONDENTS.

We have received M. Ivanoff's Communication on the Hospitals of Moscow, and we shall insert it in our next.

We return our best thanks to R. H. D. for his Remarks on Mr. Mansford's Work, and should have been happy to insert so much of it as relates to Climate, had we not ourselves already prepared a somewhat extended paper on the subject of Climate, founded on personal observation, and including some new views *even* of Consumption. We shall there necessarily have occasion to allude to Mr. Mansford.

All Communications for the Editor, are requested to be addressed to him, at Messrs. Anderson and Chase, West Smithfield.

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THE

# QUARTERLY JOURNAL

OF

# FOREIGN MEDICINE AND SURGERY.

FEBRUARY, 1819.

## Art. I. *Biographical Memoir of the late Professor Walter, of Berlin.*

John Gottlieb Walter was born at Königsberg in Prussia, on the 1st of July, 1734. His father, who was concerned in the management of the great hospital of that city, had the most decided aversion to anatomy and anatomical pursuits. So deeply rooted was this feeling, that, on his death-bed, he conjured his son not to engage in the disgusting avocations of the dissecting room, or the ungrateful toils of medical and surgical practice; but rather to devote himself to the study of the law, as a career at once more useful, agreeable, and lucrative. The college companions of the young lawyer had heard this anecdote; and, in the effervescence of boyish spirits, resolved to play young Walter a trick, by carrying him unexpectedly into a dissecting room, where the anatomist was occupied in the examination of a monster. The effect quite defeated their expectations: Walter not only contemplated without terror a scene which he had ever been taught to associate with feelings of disgust, but conceived from that instant a great interest for anatomy. He even accused the dissector of want of dexterity, and affirmed that in a few days he would be able to dissect better himself. So strong was this suddenly excited interest, that, unmindful of his father's wishes, he quitted the study of the law, and irrevocably devoted himself to medicine, and more peculiarly to anatomy.

At the early age of twenty-one, he defended in the University of Königsberg, a Thesis on the subject of his favourite pursuit: "Specimen experimentorum in vivis animalibus revisorum circa

œconomiam animalium." This work is extant in J. D. Metzger's Exercitationes Academicæ. Walter finished his medical education at Frankfort-on-the-Oder, where he took his doctor's degree in 1757. His inaugural dissertation on this occasion offers another proof of his fondness for minute anatomy: "De emissariis Santorini."

The great object of Walter's ambition was to become a perfect anatomist; in pursuance of this object he went to Berlin, and became a pupil of the illustrious John Frederick Meckel. His abilities and indefatigable industry soon gained him the esteem of this learned Professor, who, delighting to find in Walter an enthusiasm in unison with his own, admitted him to all his private experiments, and distinguished him by the greatest attentions. Under such auspices, Walter soon reaped the fruit of his labours. He was first appointed prosector at the Anatomical Theatre of the Medico-Chirurgical College, and subsequently (1764), second professor.

At the death of Meckel in 1774, Walter succeeded him in the office of first professor of anatomy and midwifery. He was likewise appointed to fill the chair of the last mentioned study in the Hospital de la Charité of Berlin.

The manner in which he discharged the important duties attached to these situations, procured him the esteem of his countrymen, and the respect and admiration of foreigners. He was admitted a member of the Academy of Sciences; the patron of which, at this period, was the great Frederick. The Royal Society of London, the Colleges of Physicians of Edinburgh and Madrid, the Royal Society of Medicine of Paris, received him as a corresponding member. Far from resting satisfied with the labours which had procured him these distinguished marks of honour, he redoubled his exertions for the progress of anatomy: he collected an excellent library, and laid the foundation of an Anatomical Museum, such as few private individuals, especially on the Continent, have ever possessed. This beautiful collection, of which Walter always speaks with a very pardonable degree of exaggeration and self-complacency, contained in the year 1802, no less than 2,868 specimens of anatomy, no two of which were similar, and each of which illustrated some particular point of importance. It was in that year that Walter offered this splendid cabinet for sale, having expended the greater part of his fortune in its formation. "Musæum anatomicum, Mæcænatibus augustis studii anatomici curatoribus, omnibus qui anatomen amant et excolunt offert venale: 8vo, Berolini, 1802." This prospectus, in sixty-eight pages, enumerates all the specimens. The King of Prussia, with a laudable

anxiety for the conservation of such a treasure to his country, purchased this cabinet for a hundred thousand dollars. It now forms the Royal Museum of Anatomy.

Frederick Augustus Walter had already given a description, in German, of part of the cabinet of his father, under the title of—"*Anatomisches Museum gesammelt von Johann Gottlieb Walter; 2 vol. 8vo. Berlin,* 1796." In this work, filial affection has occasionally led the editor to employ terms rather hyperbolical: Yet we can easily pardon such expressions when we reflect, that the elder Walter had devoted 54 years to the formation of this Museum, and had dissected, either with his own hands, or by the help of his pupils, more than 8,000 human bodies. The history of anatomy offered no parallel to this.

From this immense labour, Walter continued to snatch some moments of leisure, in which he composed several excellent works; the most important of which we shall notice in the order of their publication:—

1. "Betrachtungen ueber die Geburtstheile des Weiblichen Geschlechtes."—Considerations on the Genitals of Women, &c. 4to. with plates. Berlin, 1762.
2. "Abhandlungen von den Knochen des Menschlichen Körpers," &c.—Treatise on the Bones of the Human Body, destined for the use of the students at the Anatomical Theatre. 8vo, Berlin, 1763. 4th edition in 8vo, Berlin, 1798.
3. "Observationes Anatomicæ. Historia monstri bicorporis, duobus capitibus, tribus pedibus, pectore pelvique concreti. Curæ renovatæ de anastomosi tubulorum lactiferorum mammæ muliebris. Concrementa terrestria. Venæ capitis et colli." Folio, fig. Berolini, 1775.—Translated into German by J. Gottlieb Daniel Micheaelis, in 4to, Berlin, 1782.

Haller makes very honorable mention of the two latter works. He particularly gives the author great credit for his ingenious and just considerations regarding the periosteum. Haller also alludes, in terms of encomium, to Walter's description of the ethmoid bone, the lacteal ducts, the veins of the face, &c.

4. "Myologisches Handbuch."—Manual for the study of the Muscles, &c. Berlin, 1773. New edition, 1795.
5. "Geschichte einer Frau, die in ihrem Unterleibe ein verhärtetes Kind zwey und zwanzig Jahre getragen hat."—History of a Woman who, for 22 years, carried in her abdomen an indurated fœtus. 4to, Berolini, 1778.
6. "Epistola Anatomica ad Wilhelmum Hunterum, de venis oculi." 4to, 1778.
7. "Tabulæ Nervorum Thoracis et Abdominis." In fol. Berolini, 1783.

One of the most valuable works on Anatomy which we owe to Germany.

8. " De dissectione synchondroseos ossium pubis in partu difficili." In 4to, fig. Berolini, 1782.—(The same in German.)

The greater part of these works may be found in the Memoirs of the Academy of Sciences at Berlin. The importance of the facts—the justice and clearness of the deductions—and the accuracy of the plates, caused these works to be received in the most favorable manner.

9. " De morbis peritonei et Apoplexia." 4to, fig. Berlin, 1785.—(The same in German.)

10. " Von der Einsaugung, und der Durch-Kreuzung der Sehen nerven."—On absorption, and decussation of the Optic Nerves. 8vo, fig. Berlin, 1794.

11. " Etwas über Herrn Doctor Gall's Hernschaedellehre."—On Dr. Gall's Craniology. In 8vo, Berlin, 1805.

Walter's cardinal virtue was certainly not politeness; and in this essay he attacks the craniologists in very unceremonious terms.

12. " Museum Anatomicum, per decem et quod excurrit Lustra maximo Studio congestum, indefessoque Labore perfectum." 4to, Berolini, 1805.

13. " Was ist Geburtshülfe?"—What is Midwifery? In 8vo, Berlin, 1808.

Walter's stature was almost gigantic, and his health so excellent, that although he passed the greater part of his life in the dissecting room, he retained his vigour to the last, and died at the advanced age of eighty-four years, on the 4th of January, 1818.

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Art. II. *Memoire sur L'Hydrencéphale, ou Céphalite Interne Hydrencéphalique, par J. F. Coindet, M.D. Médecin en chef des Hospices de Genève, &c.* pp. ix—283. Genève. 1818.

When the disease called Hydrocephalus, or Hydrencephalus, first excited the particular attention of pathologists, it was considered simply as a dropsical effusion into the ventricles of the brain. The more urgent symptoms were believed to be the immediate effect of the presence of the fluid, and the treatment was directed chiefly or entirely to promote its absorption. In the natural progress of observation, circumstances soon occurred which tended to shake this hypothesis. Cases with all the usual

symptoms of hydrocephalus, were met with, which were fatal, but in which, on dissection, no effusion was found; and on the other hand, examples were not wanting in which extensive effusion occurred in the brain, without any of the symptoms of hydrocephalus. These cases might, at first, be considered as singular and inexplicable exceptions to a general rule; but they at last accumulated to so great a number, as led to a more correct and philosophical doctrine of this dangerous affection of the brain. We have now every reason to believe, that the primary disease in Acute Hydrocephalus, is an inflammatory action affecting certain parts of the brain, particularly the more deep-seated parts;—that the serous effusion is an effect of this action;—and that all the usual symptoms may exist, and even go on to a fatal termination, without this effusion having taken place.

Increased effusion from serous membranes, appears to proceed from two very different causes:—1. Inflammatory action of the membranes themselves, or of the organs with which they are immediately connected. In this manner we see it take place in the thorax, from pneumonic inflammation, and in the abdomen, from inflammation of the peritonæum, or of some of the organs invested by it. Such cases are very often fatal; and we find, on dissection, the serous effusion, combined with evident marks of the inflammation which gave rise to it: but we have also reason to believe, that cases occur in both these cavities, in which the inflammatory state may be carried off after the effusion has taken place—that the effusion may then be removed by absorption, and the parts recover their healthy state. 2. The other cause of serous effusion, is interruption to the circulation in a vein. Wherever this occurs to a certain extent, increased effusion takes place from the exhalent branches of the arteries with which the vein is connected. In this manner we see anasarca of a single limb, or part of a limb, produced by the pressure of tumours, and ascites connected with induration of the liver. Tracing such interruption backwards to the extreme arteries, we shall find reason to believe, that the effect on them will be a state of congestion very analogous to the inflammatory state. Where this state takes place in the vessels immediately connected with the exhalents of serous membranes, increased exhalation is the natural consequence. A morbid condition of this kind appears to have been recognized by some of the older writers, in what they called "dropsy from increase of lateral pressure;" and it seems to be a principle of extensive operation in regard to dropsical effusion in every part of the body. Applying these principles to effusion in the brain, there seems to

be no reason to doubt, that Acute Hydrocephalus is an example of the first, or effusion from inflammatory action. It is matter of curious and important research, as we shall afterwards have occasion to discuss more particularly, whether Chronic Hydrocephalus be an example of the second.

In the symptoms of hydrocephalus, the important distinction to be kept in mind, is betwixt those cases which are from the first acute, and those in which the disease steals on slowly and insidiously. In the former, there is generally, at the commencement, acute head-ach, with fever, impatience of light, and often vomiting: as these symptoms subside, we find the slow pulse, dilated pupil, often squinting, and double vision; and these are followed by coma, sometimes with convulsions or paralysis, the pulse again rising to extreme frequency. In the latter form of the disease, the symptoms are at first slight and ambiguous: they may assume the appearance of a slight fever, or of a disordered state of the bowels, and a considerable time elapses before alarm is excited. Perhaps there is no symptom that distinctly points out the dangerous character of the disease, until we unexpectedly find the patient affected with squinting, and gliding into coma. Both forms of the disease are often symptomatic; and, particularly in children of a faulty constitution, may be excited by various other affections, such as scarlatina, measles, hooping cough, or even by simple fever, such as in a child may be excited by a disordered state of the bowels, or any other transient cause. Whatever, in short, either excites a general febrile action in the system, or has any more immediate effect on the circulation of the brain, we believe may induce the hydrocephalic inflammation; and farther, we have little doubt that the disease is induced more frequently than we are aware of, by injuries from blows or falls, which, at the time, are not considered as being of any importance, and perhaps, to the most careful parent, are never known.

Great varieties occur in all the symptoms of hydrocephalus, and too much reliance, we think, is generally placed on the systematic arrangement of them. We have known, for example, a practitioner declare with confidence of a patient who was lying before him in a state of profound coma, that there could be no effusion in the brain, because the pulse had never sunk below the natural standard. This is that kind of confidence in system, which is one of the greatest obstacles to the improvement of medical science. At a certain period of the disease, the pulse is, indeed, generally found below the natural standard; but every practitioner of extensive and accurate observation knows, that cases occur, in which the pulse continues frequent through

the whole course of the disease, and others in which, through the whole course of it, there is no frequency at all. A still more uncommon variety we had occasion to observe lately in a girl aged six: the pulse, from the very commencement of the disease, was from 30 to 40 in a minute, and it was only a day or two before death that it rose to the natural standard. Similar varieties occur in all the other symptoms, several examples of which are mentioned by Dr. Coindet. In a child, four years of age, he observed the pupils continue constantly contracted to the last. In another, in whom he found from four to five ounces of fluid, the pupils contracted and dilated naturally through the whole course of the disease. In a patient, twenty-nine years of age, the dilatation of the pupils ceased after a full dose of laudanum, and from that time to his death they had quite the healthy appearance, contracting on the approach of light in the natural manner. Another patient, aged eleven, had the pupils contracted during sleep, and dilated, with blindness of the right eye, while awake. In some cases, again, the pupils are constantly in a state of alternate contraction and dilatation; and sometimes the one is dilated and the other contracted. Many of the most remarkable symptoms are frequently wanting. The strabismus is often so; and we have seen a case in which it took place on the fifth day, continued on the sixth, and then disappeared, the vision then continuing quite natural, until, after five days more, the patient sunk into coma. A patient of Dr. Coindet's, aged fourteen, never made any complaint of his head; and another, aged eight, retained every faculty until a few hours before death. Remarkable and unexpected recovery of the senses is also met with. Some time ago we saw a boy, aged seven, who had perfect blindness and deafness, followed by profound coma; three days after the occurrence of these symptoms, he suddenly recovered his sight and hearing, knew those about him, and talked sensibly for several hours: he then relapsed into coma, and died in thirty-six hours. The usual appearances were found on dissection: the effusion was in large quantity.

The great desideratum in hydrocephalus is some means of ascertaining the existence of the disease in the early stage, while it is yet the object of active practice, and before the appearance of those peculiar and indubitable symptoms, after the occurrence of which the case may generally be considered as hopeless. Various symptoms have been mentioned with this view, but none of them, we believe, are to be relied on. Dr. Coindet attaches much importance to a peculiar appearance of the urine, particularly a micacious deposition like crystals of boracic acid, and

which he believes to be *uré*. This appearance, he says, is almost peculiar to hydrocephalus, and takes place in the second stage: he has not observed it in any other diseases, except in two instances in catarrhal affections. This peculiarity is certainly worthy of being investigated; but we are very doubtful whether it will be found to be a diagnostic of hydrocephalus.—Indeed we do not expect that any single symptom can ever be found to answer this important purpose; and we believe the only ground of diagnosis is the combination presented by all the symptoms of the disease. A degree of head-ache and oppression, for example, which accompanied by smart fever, great heat, and foul tongue, might be considered as symptomatic of simple fever; occurring with clean tongue and slight fever, should give rise to apprehension of a dangerous affection of the brain. In regard to the pulse, Dr. Coindet takes notice of a circumstance which has always appeared to us to be deserving of much attention: we allude to a remarkable inequality in frequency; so that, if we continue to count it for several times in succession, we shall find it different each time, varying, perhaps, in the course of a few minutes, from the rate of 80 or 90 to 120 or 130.

Equally uncertain and unsatisfactory are the attempts to fix the period of the disease; to ascertain, for example, the period of effusion. We believe there are no means of doing so: dilated pupil, and even perfect coma, are not to be relied on. The pupil we have seen, in some cases, continues sensible to the last, and the patient free from coma until a few hours before death, though extensive effusion exists. In other cases the pupil, after being dilated and insensible, recovers its sensibility. We have mentioned a case in which coma, and blindness of three days duration, disappeared completely for some time, thirty-six hours before death; and it is farther ascertained, that the disease may run its course with squinting, blindness, coma, and dilated pupil, and yet be unaccompanied by any effusion.*

The duration of the disease varies very much in different cases. It is generally from two to five or six weeks. Sometimes, however, death takes place in a much shorter period: Dr. Coindet has seen the disease fatal in two or three days.

On examining the bodies of those who have died of acute hydrocephalus, we sometimes find turgescence of vessels on the surface of the brain, frequently increased vascularity of the membranes, and of the substance of the brain. Sometimes there are more unequivocal marks of the inflammatory state, as deposition

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* See Dr. Abercrombie's Cases, Edin. Med. Journal, No. LV.

of coagulable lymph in the form of a pseudo-membrane, which generally occurs on the outer surface of the pia mater. The substance of the brain is in many cases much softened, disorganised, and broken down, at particular parts, chiefly at the fornix, in the septum lucidum, and on the inner surface of the ventricles; and sometimes we meet with distinct and extensive suppuration. The effused fluid is chiefly contained in the ventricles; but there is also, in many cases, considerable effusion under the arachnoid membrane, and in the spinal canal. Both the lateral ventricles are in general equally distended; and the fluid also fills the third or fourth. Sometimes it is found to have formed for itself a fifth ventricle, by a separation of the laminæ of the septum lucidum: this new cavity generally communicates with the third ventricle; but Dr. Coindet has seen several cases in which a cavity, containing fluid, existed in the substance of the septum lucidum without communicating with any of the ventricles. Sometimes, one lateral ventricle has appeared to be more distended than the other; and cases are said to have occurred in which the effusion was confined to one ventricle. This has been supposed to be occasioned by the original disease being confined to one side, and the foramen of Monro being obliterated by adhesive inflammation. A singular case is described by Dr. Coindet, in which the right ventricle was distended with fluid, the cerebral substance on that side being sound, while the left hemisphere, through its whole extent, was reduced to a state of remarkable softness, without a drop of fluid in the left ventricle. The patient was a man aged sixty, who, after loss of memory for several weeks, was seized with severe head-ache, paralysis of the left side, and convulsion of the right, and died in four days. In a case of Chronic Hydrocephalus, mentioned by Dr. Coindet, the left ventricle contained twelve ounces of limpid fluid, while the right was distended with half-a-pound of a fluid like chocolate mixed with coagula of blood, and pieces of decomposed cerebral substance. The disease began soon after birth, and was fatal in seven months.

The fluid varies very much in quantity. In Acute Hydrocephalus it is usually from one to five or six ounces; and cases occur which are fatal with all the usual symptoms, in which the quantity is scarcely greater than in the healthy state of the parts. It varies also very much in quality, or authors differ very much in their account of it. Pechlin, Lapegronie, Brumer, and others, have stated it to be coagulable; while Malpighi and Haller say that it evaporates entirely. The truth seems to be, that it contains, in general, a small quantity of animal matter, which, on the application of heat, forms a thin pellicle on the surface.

According to Dr. Baillie, the quantity of this animal matter varies very much; and in some cases it is almost entirely wanting. In the experiments of Dr. Marcet, 1000 grains of the fluid of hydrocephalus contained nine grains and a fraction of solid matter, of which only one grain and about one-eighth was of an animal nature. This was chiefly a muco-extractive matter, with a trace of albumen. In the fluid of spina bifida, the proportion of animal matter was a little greater, being two grains and a small fraction.*

Besides the more general effusion, clusters of watery vesicles are frequently found in the choroid plexus. They are sometimes very numerous, and occasionally attain a considerable size. We agree with Dr. Coindet in thinking that they are not of the nature of hydatids: they are probably a deposition of fluid in the cellular texture of the plexus; and in a case mentioned by Dr. Baillie, they could be injected from the veins, which were beginning to become varicose before they reached the vesicles. The true hydatids, however, do occur in the brain; but they do not come under this subject, the symptoms not being allied to those of hydrocephalus, but to those of organic disease.

Hydrocephalus is sometimes found to be connected with organic disease of a part of the brain; such as small scrofulous tumours in the substance of the brain, or cerebellum, or induration of the substance of these parts, or of the medulla oblongata. In some cases these tumors have been found in a state of suppuration, forming thick and firm sacs, filled with ill-conditioned pus, of remarkable fetor. Other parts of the body may also be found diseased; such as the mesenteric glands and the liver, marking the general tendency to scrofulous diseases; and not unfrequently effusion is met with in some of the other cavities, especially, according to Coindet, in the pericardium.

There can be little doubt that there is a peculiar predisposition to hydrocephalus, it being much more frequent in some families than in others. We have good reason to believe that this depends on a certain scrofulous taint; and in large unhealthy families, in which many children have died, we often find it alternate with other diseases of a scrofulous nature, some dying of hydrocephalus, some of tabes mesenterica, and others, more advanced, of phthisis. Dr. Coindet verifies an observation which has also occurred to ourselves, that recovery from alarming symptoms in the head is sometimes immediately followed by enlargement of the glands on the neck. On the other

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* Medico-Chirurg. Trans. Vol. II.

hand, various diseases of a scrofulous nature may pass into hyrocephalus. We have seen several examples of persons being cut off in this manner, who had been for some time affected with phthisical complaints; the pectoral symptoms generally declining as the complaints in the head advanced. In these cases, however, the symptoms only are alleviated, or sometimes entirely disappear for several days before death; and no real change takes place in the disease of the lungs, except when the head symptoms have appeared at an early period of the pulmonary affection, before ulceration has taken place, or when they go on for a considerable time before they are fatal. In such cases the lungs may be found healthy; but in the ordinary cases in which the head symptoms appear at an advanced period of the disease, and are fatal in six or eight days, though the pulmonary symptoms may have ceased for several days, the lungs are found in the same state of disease as if no such alteration had taken place. Dr. Coindet mentions a lady, aged 29, who, after being for some time affected with symptoms of phthisis, was seized with complaints in the head, which advanced so slowly, that it was not till the end of two months that she died with the usual symptoms of hydrocephalus; the pulmonary complaints having subsided gradually as those in the head advanced. Four ounces of fluid were found in the ventricles of the brain; but the lungs were quite healthy. The father of this lady had died of phthisis a few months before she was taken ill.

In regard to the relative mortality of hydrocephalus, several tables are given by Dr. Coindet, from a register of deaths kept at Geneva, and of course liable to all the uncertainty which is inseparable from such records. According to these, it appears that the disease is equally fatal to males and females—that it is most fatal in the first year of life—and that, out of 209 fatal cases, 165 happened before the end of the seventh year. Among females, a great mortality appears about the age of twelve; the number of females cut off by hydrocephalus about that age, being, to the number of males, as 8 to 1. This is a remarkable fact, and can only be accounted for by the influence of the menstrual period. There are, in these tables, examples of the disease in every year of life, up to sixteen: after this, it becomes less frequent; but there are occasional cases of it to the age of forty-two. We believe it may occur at any age. In a population of 22,000, the annual mortality from hydro cephalus is stated to be at 21, on an average of ten years; and the whole number of deaths from it, in France, is estimated by Dr. Coindet as not under 20,000 every year.

The predisposition to hydrocephalus we have already stated

to consist, in our opinion, in a greater or less degree of the scrofulous taint; and this seems to be, in many cases, ascertained by the combination of the disease with affections of the mesenteric glands, or the liver. In such a habit it may be excited by a variety of causes, many of which elude our observation; but some are sufficiently obvious. The true idiopathic hydrocephalus is to be considered as an inflammatory disease, excited by causes analagous to those which produce other inflammations. The symptomatic, we believe, may be induced, in habits strongly predisposed, by any thing that excites a febrile action in the system in general, or that more immediately affects the head. To the former class belong febrile diseases of all kinds—to the latter, hooping cough and injuries of the head by blows or falls. The latter we suspect to be a frequent cause of the disease in children. We have seen it in a man of 40, distinctly excited by a fall, in which he struck his head with considerable violence, but which produced no alarming symptom for several days. Suppressed evacuations are also, in many cases, to be traced as causes—the most common example of which is suppression of the menstrual discharge, or its retention. Complaint of the head in such cases, especially in young women of unsound stamina, is always to be watched with anxious care, and treated with great decision. We have already mentioned the remarkable mortality in females about the menstrual period, which appears in the register of Geneva. Suspension of the secretion of urine is also frequently followed by effusion in the brain, as in ischuria renalis; and in some cases retention has the same termination, especially retention in the kidneys, by obstruction of the ureters.

In habits disposed to local inflammation, we have many examples of it being excited by general febrile action. In this manner, in the course of continued fever, and often at an advanced period of it, we find inflammatory action excited in the lungs, in the bowels, in the parotid, or the lymphatic glands, and in almost every structure in the body. In the same manner, we have no doubt that the hydrocephalic inflammation may be excited by any febrile disease; and it certainly is by no means an unfrequent termination of typhus. Dr. Coindet treats this subject in a distinct and philosophical manner, and gives an example of hydrocephalus which supervened upon a severe catarrhal affection, and was fatal, with convulsion and paralysis. A peculiar disposition to local inflammation, on slight exposure to cold, exists after scarlatina. The most common example of this is a dangerous affection of the lungs, accompanied by general anasarca, and often fatal. We find, on dissection in such cases,

the most unquestionable marks of inflammation in the lungs and the pleura, and often in the peritoneum. In the same manner, and under the same circumstances, the disease may fall upon the brain; and, if not corrected by decided treatment, may terminate in hydrocephalus. A child recovering from scarlatina, after exposure to cold, perhaps by running to an open window in cold weather, is seized suddenly with head-ache and convulsions, succeeded by coma. This attack may have been preceded by anascarca in the ordinary form, and on that account is apt to be ascribed to sudden effusion in the brain; but the disease is inflammatory, and the patient can only be saved by decided antiphlogistic treatment. Upon this plan many have been saved—others have died of hydrocephalus; and some of those who recovered have continued liable to epileptic paroxysms, some degree of induration, or other organic disease of the brain, being probably left as an effect of the inflammatory action. Dr. Coindet mentions hydrocephalus supervening upon the common febrile diseases of the puerperal state, and upon Acute Rheumatism. We remember to have seen, many years ago, a young man affected with acute rheumatism, in whom the pain and swelling of the joints suddenly disappeared, and were succeeded by maniacal delirium. After a day or two, the disease returned to the joints, and the delirium disappeared. Had the complaint not taken this favourable turn, it might very probably have terminated by effusion.

Among the causes of hydrocephalus, Dr. Coindet alludes to a circumstance which has often appeared to us worthy of investigation. We refer to a singular connection betwixt the disease and intus-susceptio of the bowels. In the dissection of cases of hydrocephalus, this affection of the bowels is frequently met with; and it generally exists in several places at once—perhaps in three or four. We have seen seven or eight in one body, and in one case fourteen. They appeared to be quite recent, the parts being free from inflammation or thickening.—In the cases that have occurred to us, there was no unusual obstinacy of the bowels; and we are disposed to consider the intus-susceptio as having taken place a short time before death, connected, perhaps, with some derangement of the peristaltic motion; for, from the tendency of the diseases of the head to produce vomiting, we may suppose them capable of affecting the peristaltic action of the bowels also. Some cases of this affection, however, are evidently of longer standing, and appear to have preceded the disease in the brain. A girl aged six years, mentioned by Dr. Coindet, had severe pains in the belly, vomiting, and constipation: on the fifth day, head symptoms ap-

peared, and she died on the twelfth. On dissection, serous effusion was found in the brain, and in the ileum an extensive intussusceptio, in which a portion of intestine, six or seven inches long, was highly inflamed and thickened.

On the pathology of hydrocephalus, Dr. Coindet has many just observations; and we agree with him in thinking that it is really to be considered as an inflammatory disease. It seems to differ from phrenitis in the seat of the inflammation, which in the true phrenitics is probably in the superficial parts, especially in the pia mater, and in the hydrocephalic inflammation, in the deep-seated parts. We see, in such cases, many proofs of its existence in the septum lucidum and fornix, on the inner surface of the ventricles, and sometimes in the substance of the brain. The great difference to be observed in different cases, is in the activity of the inflammation, which in some is acute and violent, in others low and obscure, probably the pure scrofulous inflammation; and in others shewing various gradations betwixt these two extremes. It probably also varies a little in its character, according as it may have been primarily seated in the serous membrane lining the ventricle, or in the cerebral substance. In a case mentioned by Mr. Howship, the principal seat of it seems to have been the choroid plexus.

The particular source of the effusion has been matter of doubt, which will probably never be resolved. Against the supposition of it being effused by the serous membrane lining the ventricles, Dr. Coindet brings forward an objection founded on the quality of the fluid; other serous membranes, under the influence of inflammatory action, throwing out a fluid which is coagulable. In the experiments of Dr. Marcet, already alluded to, the quantity of animal matter in the fluid of hydrocephalus was one grain and one-eighth in 1000—in the fluid of ascites there were 25 grains—in that of hydrothorax 18—in that of hydrocle 71; the latter approaching to the qualities of serum, in which the quantity was 90. This is certainly a remarkable peculiarity of the hydrocephalic fluid; but on what it depends, will probably elude our researches. We think there is some ground for supposing that the effusion is chiefly from the choroid plexus; but this, we allow, is little more than conjecture, and the question is of no practical importance. Dr. Coindet's hypothesis is, that the inflammation is seated in the exhalent system, and not in the capillary extremities of the arteries. The probability, we think, is, that the disease varies very much in its seat; and probably extensive observation may shew, that the fluid also varies in its qualities. In a case related by Mr. Howship, the choroid plexus was covered by flocculi of coagu-

lable lymph, and the fluid in the ventricles was puriform. In another there was about an ounce of serous fluid, mixed with some puriform matter, and shreds of coagulable lymph. We have seen a case which was only remarkable for the rapidity of its progress, in which the ventricles contained only purulent matter, without serous effusion in any part of the brain. Whatever view we may take of these points, we conceive the following important pathological principles to be completely established—that the effusion is the effect, and not the cause of the disease—that the urgent symptoms are the result of the inflammation, not of the effusion—and that the disease may run its course to a fatal termination without effusion. The striking proofs of these positions arise from cases which have been fatal with all the usual symptoms of hydrocephalus, but in which no effusion was found; and others, in which there was extensive effusion without any hydrocephalic symptoms. In a maniac mentioned by Mr. Marshall, one pound of fluid was found in the brain: he died of gangrene of the extremities; and a few hours before his death, he became perfectly rational.

On this view of the disease must be founded both our prognosis and our practice. Our prospect of arresting it will be greatest in those cases in which the symptoms are from the first acute, and approaching to the nature of active inflammation; and it will be least in those in which they are slow and insidious, partaking more of the purely scrofulous character. On the same principle, probably, the idiopathic cases may be considered as more favourable than the symptomatic, and those which occur in constitutions which appear to be tolerably sound, than in habits in which we have proofs of a scrofulous tendency. Dr. Coindet thinks the disease is most unfavourable after puberty. In this we do not agree with him: in our experience, at least, we think we have been, upon the whole, most successful in adults. Notwithstanding the highly dangerous character of the disease, it is in so far a satisfactory result of our investigations, to be convinced that it is not incurable. We do not allude to the speculations, whether, after fluid has been effused in the brain it may be absorbed, because we do not consider the effusion as the essence of the disease, and because we are satisfied that it may be fatal without effusion. We mean, that by decided treatment in the early stage, the disease may frequently be arrested while it is yet in the state of simple inflammation.

For this purpose, we conceive the powerful remedies to be blood-letting, general or topical, according to the age and habit of the patient, cold applications to the head, blistering on the neck, and smart purging by the most active cathartics. Mer-

cury, pushed to smart salivation, has sometimes had the best effect; while, in very many cases, it has been employed in the most active manner without any benefit. Under one or other of these modes of treatment, however, there is no doubt that many cases have recovered, after the appearance of the most unequivocal and alarming symptoms, such as dilated pupil, squinting, double vision, loss of speech, paralysis, and perfect coma. Some of these have recovered under the use of blood-letting and purging—some under strong purging alone, generally by large doses of calomel—and some by mercury pushed to salivation. It remains to be added, that several of them recovered without the use of any active remedy, or after active remedies had been tried and relinquished in despair. A child mentioned by Mr. Cribb,* had convulsions, repeated frequently for seven or eight days, succeeded by squinting, dilated pupil, blindness, and coma. Blistering, purging, and mercurial friction, were employed for three months without benefit, and without the mouth being affected. The child was then taken to the country, and all medicine was discontinued. After a fortnight he began to amend, and in a month was well. Another child, mentioned in the Edinburgh Medical Commentaries, had loss of speech, coma, and insensibility of the pupils, and recovered in twenty days, by the daily use of the warm bath. Our limits prevent us from enlarging on this interesting subject; but for the use of those who may be disposed to prosecute it, we shall add, in a note, some references to cases which have terminated favourably, after exhibiting the unequivocal symptoms of this alarming disease.† In these favourable cases there was, as we have stated, considerable diversity in the treatment: some recovered under evacuations, and some under mercury; one without any active remedies, and one with wine and other stimulants. We think there is considerable reason to suppose, that the circulation in the brain in children may be deranged from a variety of causes, so as to simulate the symptoms of hydrocephalus. This is, indeed, according to the analogy of other organs,

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* Mem. Med. Society of Lond. Vol. IV. p. 402.

† Rush's Medical Inquiries, Vol. II.
Edinburgh Medical Commentaries, Vol. VIII. p. 235—p. 232—p. 106—Vol. X. p. 290.
Edinburgh Medical Journal, Vol. VI. p. 283, 284—Vol. XIV. p. 326.
Mem. Medical Society of London, Vol. IV. p. 402,
Medical Observations and Inquiries, Vol. IV. p. 321—Vol. VI. p. 48—p. 54—p. 58.
London Medical Journal, Vol. IV. p. 82.
London Medical Repository, Feb. 1817—Do. June 1817.

Dyspnœa, for example, is an effect of inflammation of the lungs, but may also exist in connection with a state far removed from inflammation: pain, vomiting, and obstruction of the bowels, are symptoms of enteritis, but often appear when no inflammatry state is present. On the same principle, dilated pupil, squinting, and coma, are induced by the hydrocephalic state in a certain stage of its progress, but we have every reason to believe that they may be connected with conditions of the brain far removed from this, and even directly opposite to it. The striking illustration of this statement, is in a comparison betwixt the opposite conditions of apoplexy and syncope. Except that in the one the pulse is generally full and the face flushed, and in the other the face pale and the pulse feeble, the symptoms are precisely the same: loss of sense and motion, preceded by giddiness, tinnitus aurium, loss of recollection, and failure of sight, and both frequently passing into convulsion. We have frequently known children, from mere exhaustion, fall into a state not to be distinguished from the coma of hydrocephalus, and recover by wine and nourishment.

We shall not follow Dr. Coindet through his detail of the various remedies that have been employed on the Continent. He divides the disease into two stages: the first, he thinks, should be treated by antiphlogistic remedies, the second by stimulants. The Continental practitioners, it appears, have been in the habit of employing, in various stages of it, wine, oxyd of zinc, opium, mercury, digitalis, sternutatories, and phosphorus.

Chronic Hydrocephalus differs remarkably from the disease which has been the subject of these observations. It is probably to be considered as simple effusion, and the symptoms as the direct effect of the presence of the fluid. While the head continues to enlarge, the functions of the brain frequently go on with little interruption: when the enlargement ceases, if the effusion goes on, symptoms of oppressed brain appear immediately. The disease may, in general, be considered as incurable, but there are several circumstances connected with it, which, in a pathological point of view, are worthy of being investigated. We do not here allude to the never-ending controversy, whether the cerebral substance, in chronic hydrocephalus, be diminished or merely unfolded;—we never could consider the dispute as of much importance. The important subject of investigation, in regard to the disease, we conceive to be, what is the cause of the effusion. We have already alluded to the two great sources of increased effusion from serous membranes;—inflammatory action, and interrupted venous

circulation. The former seems evidently to be connected with the acute hydrocephalus; and there are circumstances that give considerable probability to the conjecture, that interrupted circulation in the veins may be the cause of the chronic. This subject has probably not been sufficiently investigated in the examination of cases of chronic hydrocephalus, but we think that curious and important results may be expected from an accurate examination of the venous system of the brain in such cases, particularly the sinuses of the dura mater, and the vena Galeni. As interruption of the circulation in the vena cava, by enlargement of the liver, produces ascites, there is much reason, from analogy, to suppose that compression or contraction of the vena Galeni, or of the sinuses, would give rise to effusion in the ventricles. Appearances that might have produced this effect, have accordingly been observed in some cases of chronic hydrocephalus. In a case by Dr. Clarke, a considerable part of the right hemisphere was cartilaginous; and in one by Lieutand, the cerebellum and part of the medulla oblongata were in a state of scirrhus. We lately saw a case, in which the disease began soon after birth, and was fatal before the end of the second year. The quantity of fluid was very great, and the other appearances such as usually occur in cases of this kind. In tracing the sinuses, there was found a remarkable protuberance in the bone, exactly at the division of the longitudinal sinus: here the sinus opened freely into the right lateral, upon the right side of the tumor, but no communication could be found betwixt it and the left lateral, until, after minute examination, it appeared that a narrow canal passed down from the usual place of the division of the sinuses, a considerable way upon the occipital bone, then passed upwards again on the left side of the bony tumor, and fell into the left lateral sinus. We do not pretend to say what degree of importance is to be attached to the appearance which we have here mentioned, and shall only further beg leave to suggest the subject as a curious and important field of observation.

The commencement of chronic hydrocephalus, is sometimes accompanied by coma, dilated pupil, and other symptoms resembling those of the acute. In this case, however, they probably depend on a different cause. They may be produced either by the accumulation of fluid, the head not having yet begun to distend, or by a certain derangement of the circulation which precedes the effusion, and which is probably more allied to apoplexy than to inflammation. When the distension of the head begins to take place, these symptoms cease, and the patient sometimes continues in possession of

every faculty, though the disease may be advancing progressively. In a girl, mentioned by Dr. Coindet, the disease began at five months, and at twelve years she died of a disease of the lungs. The ventricles of the brain contained from twelve to fifteen ounces of fluid, yet she retained every faculty to the last, and in understanding had been considered as superior to her contemporaries. In some cases this healthy state of the faculties continues as long as the head continues to enlarge, and ceases when ossification of the sutures takes place. This occurred in a boy mentioned by Sir E. Home, who was sensible during three years while the head continued to increase; his skull then began to ossify, and he became blind and stupid, and died at six years, the cranium being then twenty-seven inches in circumference, and completely ossified, except a small part at the fontanelle, and a narrow space in the middle of the os frontis. In another patient mentioned by him, however, who was then alive, the head was thirty-three and a half inches in circumference, and had been completely ossified for five years; yet his faculties were pretty entire; his sight was natural, and his memory, for ordinary things, very good; he could read, write, and repeat verses, and only complained of occasional head-ache when he was exposed to heat. This difference can scarcely be accounted for by supposing that in the former case the effusion continued, and that in the latter it ceased to increase after ossification began; because had it in the former gone on increasing, it must have been fatal in a much shorter period than three years. It is probably referable to some condition of the circulation in the brain, the particular nature of which eludes our researches. It is an important circumstance in the pathology of the disease, that in the course of it the comatose state may take place for some time, and go off again completely. In a child mentioned by Dr. Coindet, the disease began soon after birth, and for four months he continued in possession of every faculty; he was then seized with vomiting and convulsion, followed by dilated pupil and coma, and appeared to be dying: after a short time, however, he recovered, and enjoyed good health for three months, when a second attack of the same kind was fatal. It does not appear to be ascertained in what manner the cerebral mass is affected in chronic hydrocephalus. In one of Sir E. Home's cases, it was lighter by nine ounces than the brain of a healthy child of the same age (six years.) It does not follow, however, that there was this deficiency of cerebral matter, as this difference of weight might have been occasioned by a diminution of the quantity of blood contained in the vessels

of the brain, and this diminution is very likely to be the first effect of the state which we call compression of the brain.

Is effusion in the brain necessarily hopeless—and is there no chance of the fluid being absorbed?—The membrane of the ventricles is a serous membrane: in the most healthy state of the parts a small quantity of fluid is contained in them, and in all other serous cavities this fluid is in a constant state of renewal by absorption and fresh deposition. We cannot doubt that the same function goes on in the brain, though we may not be able to point out the vessels by which it is carried on. From analogy, therefore, we have no doubt that there is absorption in the brain. Then why is effusion there generally so fatal? The acute hydrocephalus, we conceive, is dangerous, not as an effusion simply, but as an inflammatory affection of a vital organ, and we have accordingly every reason to believe that the disease may be fatal without effusion. It is, therefore, on a footing with the effusions which accompany pneumonia and peritonitis, which considered merely as effusions, are of little moment, but considered in their connection with the preceding affections, are fatal. To promote absorption would little, if at all, improve the condition of the patient, and we imagine there is no reason to suppose that absorption would be more beneficial in the ordinary cases of acute hydrocephalus.

In regard to the other dropsical affections of the abdomen and thorax, why are the ordinary cases of ascites and hydrothorax so unmanageable? not from a deficiency of absorption, but from a fixed and irremediable cause, which renews the disease as quickly as we begin to make an impression upon it, and in ascites, even after a complete evacuation by tapping, often reproduces the accumulation in a few days. We think there is some reason to suppose that some such fixed and irremediable cause exists in chronic hydrocephalus. We certainly observe variations in the size of the swelling, giving reason to suppose that a certain degree of absorption had taken place, and in several cases the fluid has been evacuated by puncture, without any bad effect, but without producing any favourable change, for the disease was speedily renewed. But further, we know that there are cases of ascites, and we have much reason to believe that there are cases of hydrothorax, which depend upon causes of a more transient and temporary kind, and when once removed, do not return. We see no decided objection to the supposition that this may also take place in the brain. If it do take place, it will probably occur in cases of a chronic kind, because these only are to be considered as cases of simple effusion. If chronic hydrocephalus then should take

place, from a cause which is soon removed, we think there is some reason to believe that the effusion may be removed also, and the case do well. A child, aged four years, mentioned by Dr. Clarke,* was affected with very considerable enlargement of the head, strabismus, dilated and nearly insensible pupil, a rotatory motion of the head, and a desire to lay it any where for support—the case was of eighteen months standing, and had begun after measles. It was treated by frequent purging, the constant use of calomel and pulvis antimonialis, and large blisters in succession, and recovered perfectly in about six months. We have heard of another case which occurred in Edinburgh, and which recovered after the sutures had been opened very considerably, and Dr. Coindet quotes a case from Rossi, in which he asserts that he saved a case of chronic hydrocephalus by puncture, having drawn off six ounces of fluid. The patient was eleven or twelve years of age, and the disease had come on after a fall in which the parietal bones were so separated that fluctuation could be perceived distinctly.† The subject is highly important, and presents a most interesting field of investigation.‡

The term hydrocephalus was used by the ancients, but it was applied to anasarcous swelling of the integuments of the head—"Ubi humor cutem inflat," (says Celsus,) "eaque intumescit, et prementi digito cedit; ὑδροχέφαλον Græci appellant." Aetius was the first, according to Dr. Coindet, who distinguished the disease into external and internal, meaning by the external, the œdematous affection of Celsus. The term external hydrocephalus, seems to have been employed by some modern writers in a different sense, as synonimous with chronic hydrocephalus, which was at one time supposed to be generally seated on the outside of the brain. This we now know to be a mistake, and the term external hydrocephalus is not employed. Dr. Coindet employs the term hydrencephalus, which has been used also by several writers in this country, as preferable to hydrocephalus, the latter signifying water in the head, the former water in the brain. He proposes, as a farther improvement, that the term hydrencephalus shall be applied to the acute disease, in which, according to him, the fluid is always in the ventricles, and hydrocephalus to the chronic, in which he thinks the effusion may

* Edinburgh Medical Journal, vol. vi. p. 283.

† Coindet, p. 223.——Rossi Chirurg. Operat. vol. ii.

‡ Since this paper was prepared for the press, a case of hydrocephalus, successfully treated by the removal of the water by operation, has been published by Dr. Vose of Liverpool, in the second part of the ninth volume of the Medico-Chirurgical Transactions.

be in other situations. If we were to dispute about a name, we should be a good deal inclined to doubt the accuracy of this distinction. In the acute disease, there is certainly in general water in the ventricles, but it is by no means confined to them, being often found on the surface of the brain, and in the spinal canal. In chronic hydrocephalus again, the fluid we think is in general confined to the ventricles, perhaps more exclusively than in the acute. We remember to have seen only one chronic case in which there was fluid on the outside of the brain, and it had evidently been discharged from one of the ventricles, by bursting of the cerebral matter. The cases in which extensive effusion is most commonly met with on the surface of the brain, are those which have been called serous apoplexy, more properly to be considered as the apoplectic state terminating by effusion; it also occurs in old paralytic cases. In these affections, the principal effusion is sometimes on the surface, a large quantity being collected under the arachnoid membrane, while there is comparatively little in the ventricles.

Dr. Coindet is evidently a man of much observation and sound judgment, and we consider his book as a valuable acquisition to medical literature.

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Art. III. *Handbuch der Chirurgischen Anatomie, von Dr. Friedrich Rosenthal, ausserordentlichem Professor der Medicin an der Universitaet zu Berlin. Berlin and Stettin, in der Nicolaischen Buchhandlung,* 1817.

*Manual of Surgical Anatomy. By Frederick Rosenthal, M.D. Professor Extraordinary of Medicine in the University of Berlin. Berlin and Stettin, Nicolai,* 1817. 8vo. pp. 195.

There can be no respect more just than that which is entertained for those illustrious men, who have so much distinguished themselves in the study of anatomy within the last hundred years, and whose names are regarded in the schools almost with veneration. Yet we have often been led to regret, that they should have confined themselves so much to Descriptive Anatomy. The labours of Albinus, Haller, Walter, William Hunter, and Mascagni, have terminated indeed, if not in rendering descriptive anatomy perfect, at least in bringing it into a state which can admit of comparatively very inconsiderable improvements. These great anatomists have left Surgical, or more properly speaking, Relative Anatomy, as a field to be subdued by the toils of their successors. Their successors have already begun their labours: nor have the harvests been scanty. The works

of Mr. John Bell, of Professor Scarpa, and of Mr. Astley Cooper, are more than an earnest of what is yet to be reaped. The relative anatomy of aneurism, lithotomy, and hernia, has been explained. Whilst we render justice to these three living characters, let us not forget the merits of one who had already given proofs of his diligence in the study of relative anatomy, and who, had he lived, would in all likelihood have added still more to his writings on that subject, and to his reputation; we mean Mr. Allan Burns. We have joined our lamentations over his untimely death with those of Scarpa, Kreisig, and Joseph Frank; and by chance we had the mournful office of announcing it to Soemmerring, than whom we have conversed with no one who appeared to value Mr. Burns' labours with greater justice.

Surgical Anatomy is nothing else than a topography of the human body, which, as well in reference to mechanical operations, as to the diagnosis of mechanical injuries, is of the greatest importance to the surgeon. Every surgical operation requires an exact discrimination between the important and the less important parts. Relative anatomy directs the surgeon's attention chiefly to the former, and enables him not only precisely and accurately to know their distances from each other, but also their several distances from the surface of the body. The knowledge which is acquired by the study of relative anatomy is so much the more complete, when the surgeon can, upon the external surface of the body, plan out before hand the several parts concerned in the operation which he is about to undertake. It is so much the more necessary, to acquire by practice on the dead subject, a certainty and dexterity in determining on the surface of the body, the situation of the deep-seated parts, as these, obscured by hæmorrhage and other causes, can in no operation lie so clearly before the eyes as we see them in the exercises of practical anatomy, or in the demonstrations of that anatomy which is purely descriptive.

Descriptive Anatomy may be compared to the map of the geographer—Relative Anatomy to the chart of the navigator; and as a common map would be but of little use at sea, so a surgeon must ever be in danger who is unacquainted with relative anatomy. In the chart we see marked out the track which it is most safe to follow; we have the depth of every sounding, the situation of every sand-bank, the direction of every tide, and the place of every light and beacon. In relative anatomy we are taught the course of our incisions, the depth of every artery, the situation of every part which we must avoid, and of every thing which our knife may pass through without danger.

In order to treat of relative anatomy with precision, it is necessary to arrange our descriptions under certain regions; and when it is practicable, these ought to be natural regions of the body. The perineum, for instance, the groin, the anterior surface of the fore arm, are natural regions. Yet there are advantages in combining certain artificial limits with these natural regions; there are advantages in divisions bounded by lines drawn over the surface of the body by the rule and square. Such divisions are more definite than natural regions, which pass imperceptibly into one another. The first lesson then of relative anatomy consists in measuring the body; in laying out this, our empire, into provinces; and in enumerating certain prominent and invariable points and lines, which may serve as the landmarks and boundaries of our divisions.

The Manual of Dr. Rosenthal is the only attempt, except the excellent but uncompleted work of Dr. Colles, which we have seen, to give to the student of relative anatomy a guide to this most necessary branch of medical knowledge. The author commences his work in the manner of which we have been just speaking. Having established the length of the face as a common measure of proportion for all the parts of the body, he next endeavours to fix upon certain invariable points, which, once known, may guide the surgeon in his search for those parts which do not appear, and which are perhaps not even to be felt, so long as the integuments of the body remain entire. By connecting these invariable points by lines, the surgeon comes to possess a ground-sketch, not less useful to him than are ground-lines to the painter.

We think the plan, after which Dr. Rosenthal has divided the body, extremely accurate. Having noticed the division into head, trunk, and extremities, he subdivides each of these into several parts, and then treats of the relative position of the contents of each compartment. His first chapter, for instance, contains the relative anatomy of the cheek; and under this head he considers the positions and relations of all the parts interested in extirpation of the parotid gland—in the cure of salivary fistula—in the perforation of the antrum Highmori—and in luxation of the lower jaw. A similar plan is followed throughout the work, the whole of which is executed with great care and accuracy. We must complain, indeed, that Dr. Rosenthal, though he evidently entertains very accurate ideas of the importance of surgical anatomy, has fallen frequently into merely systematic description, and has forgotten that his object was to paint the *ensemble*, not to delineate, in a separated state, the individual muscles, arteries, and nerves.

We have heard Dr. Rosenthal's assiduous pursuit of anatomy spoken of in terms of very high estimation, by Professor Rudolphi; and hope, upon a republication of his work, which has already become extremely popular in Germany, to find it considerably improved in this respect. He has very properly shunned the example of Mr. Burns, by entering into no minute details of individual cases, a method of writing inconsistent with the size of a synopsis; but, by imitating the manner of that author's anatomical descriptions, Dr. Rosenthal would certainly very much improve upon the manner in which he has begun the study of this most interesting and almost new branch of anatomical science. In the mean time, we earnestly recommend this Manual to those of our own countrymen, either at home or abroad, whose opportunities allow them to prosecute this study.

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Art. IV. *Troisieme Mémoire sur l'Asphyxie, considerée dans les Batraciens, par M. Edwards, Docteur en Médecine. (Lu à l'Academie des Sciences le* 13 *Juillet,* 1818.*)*

(Communicated by the Author.)

In a Memoir which I had lately the honor of reading to the Academy, I undertook to examine the causes which might give rise to variation in the phenomena of Asphyxia, which I had on a former occasion described. I began by investigating the effects of temperature in asphyxia from submersion; and in so doing I deferred the consideration of every other cause capable of affecting the life of animals in similar circumstances, to a future stage of the enquiry, when they should be successively examined.

In thus confining myself, at the outset, to the influence of temperature alone, I proved, that according to its degree, it occasioned considerable variation in the duration of life in the animals which I submitted to experiment. It was found, that when plunged under water, their existence was prolonged in proportion to the coldness of that fluid, and to the lowness of the temperature of the atmosphere for some time preceding the experiment.

These facts naturally led me to enquire what is the limit of this influence, and to ascertain the greatest duration of life which these animals can enjoy when deprived of the external air by submersion in water. Is the duration of asphyxia, in parallel cases, unlimited? Do frogs pass the winter under water, with-

out coming to the surface during the whole of that season, to breathe? Or are we to believe that they exist in this way during a much longer period still, viz. that which elapses from the time of their disappearance in autumn, to their return in spring?

Spallanzani was not of this opinion. From information furnished by the frog fishers in the vicinity of Pavia, he states, that these animals leave the water of the rivers of that country in October, and retire into moist sand, in which they contrive an opening, called by the fishermen the *frog's vent hole (il respiro della rana)*. These people brought some of this sand to Spallanzani; and, on its being properly moistened, he saw the frogs which he had put into it act precisely in the manner which had been described.

Notwithstanding this authority, however, some celebrated French naturalists report that frogs retreat into the water during the cold season, from the month of October to the beginning of spring. The testimony of one of these learned men is decisive on this point, as far as regards France. M. Bose, who has observed with particular attention the habits of these animals in various climates, has himself known frogs to live under water during winter, and has frequently caught them in that season. But how do they live under water? Do they remain always at the bottom, or do they from time to time come to the surface to breathe? It is by no means easy, by the most attentive observation, to prove either. Allowing that we could stand on the banks, with our eyes constantly fixed upon the water, how are we to be assured that these animals have not escaped our observation in coming to breathe at the surface? And admitting that it was impossible for them to elude our vigilance, it would still be necessary to watch them during the whole of the time that they are incapable of living without breathing. In the preceding experiments we have seen that they have lived under water for the space of two days and a half. We have, therefore, as yet, no direct proof that these animals pass the whole of the winter under water without breathing.

It might be alleged in favour of this opinion, that living frogs have been found under ice; but facts of this kind, though they have undoubtedly been frequently observed, are not circumstantially enough detailed to serve as conclusive evidence. It would be necessary to know precisely the number of days from the formation of the ice, and to be satisfied that no aperture existed in it. M. Bose has informed me that he has seen frogs towards the end of winter leave the water at noon, and remain a short time on land to breathe.

In the numerous experiments which I made during the winters

of 1816 and 1817, on the asphyxia of frogs in a determinate quantity of water, I did not find that in any case their existence was extended beyond two days and a half, even in circumstances the most favourable for its prolongation during their submersion. In one experiment by Spallanzani, a frog lived eight days under water, the temperature of which varied from half a degree to one degree above the freezing point; but he adds, that at a higher temperature, it would inevitably perish in the space of one day. But the temperature of the waters which frogs inhabit during the long season of their retirement, varies considerably; we are not, therefore, warranted to conclude, from the facts hitherto known, that frogs pass the autumn and winter under water, without coming occasionally to the surface for the purpose of respiration.

We cannot suppose that they possess this faculty from their being torpid during their hybernation, because torpidity does not dispense with the necessity of respiration. Besides, as M. Bosc has observed, frogs do not pass the winter in a state of torpidity, if by that term we mean the absence of sense and voluntary motion. They are certainly less active during cold, but they move even at the freezing point.

In the experiments which I have made on the influence of temperature, I obtained the same results; but in these experiments, the agency of the air contained in the water was not an object of investigation. The examination of this question would perhaps make us acquainted with a new condition capable of influencing the duration of the life of frogs under water, and might probably lead to the solution of the question which we have just been discussing. Experiments alone can decide it; and I know only one which has been made on the subject. Spallanzani placed a frog in water, deprived of its air by ebullition, and another in an equal quantity of aerated water. The frog which was placed in the water deprived of its air exhibited signs of approaching death at the end of ten hours, whereas that in the water containing its air was not reduced to the same state till the expiration of twenty hours. But this experiment, unsupported by any other, proves nothing; for the result might arise entirely from difference in the strength of the two animals, every other circumstance being the same.

The influence which the air contained in the water exerts on the life of fishes, has been examined with very great care by Spallanzani, by M. Silvester, and by MM. Humboldt and Provencal. The labours of these different individuals have brought to light some facts highly interesting to the natural history of fishes. But the results of their investigations are

not strictly applicable to a different class of animals. Fishes are provided with gills, a respiratory apparatus, by means of which the blood of these animals, destined to live constantly in water, is exposed to the action of the air. Frogs which have attained their adult state, as well as toads and salamanders, are only furnished with lungs, organs designed merely to respire the atmospheric air, whether they inhabit the water, or live on land.

But the faculty of existing in both elements does not constitute these animals *amphibious*, in the sense now attached by naturalists to that term. To be amphibious, they must possess the double faculty of respiring the air of the atmosphere, and living at the expense of the air contained in the water. But this double means of existence has not been recognised in any species of vertebral animals arrived at maturity, except the *Protei* and *Sirens*. M. Cuvier has demonstrated that they possess the same structure that the tadpoles of salamanders possess—lungs and gills in the same individual, which enables it to carry on this double function.

If the batracians, and these singular animals which have been added to that family, enjoy the rare privilege of breathing the air of the water, as well as that of the atmosphere, they are also provided with a double apparatus of gills and lungs which characterises that double faculty. There is nothing as yet, however, which can lead us to presume that the batracians which are not supplied with these two sorts of organs, enjoy the advantage which would result from their possession.

What influence the air contained in water exerts upon the life of these animals, is therefore a question both new and interesting; and one which I have endeavoured to solve by experiment.

I made use of water which I had exhausted of its air by ebullition. We know from the experiments of MM. Humboldt and Provencal, that the air is not entirely expelled from water by boiling it in an open vessel; but the quantity which remains after this process is so inconsiderable, as we shall see by and bye, that it is scarcely appreciable.

I employed glasses of the capacity of 80 centilitres, which I filled with boiled water, reduced to the temperature of the atmosphere, and inverted over saucers containing two centilitres of the same water. I then filled an equal number of similar glasses with water containing its air, and placed them in saucers of the same kind. I had previously introduced a frog into each glass at the same moment, in order to observe the duration of their existence in these two different conditions.

The frogs which had been immersed in the water that had

not been deprived of its air, for the most part, lived longer than those in the non-aerated water; but the difference was seldom sufficiently striking or uniform to render the result decisive. The only inference which can be drawn from this series of experiments is, that the smallness of the quantity of water employed did not contain enough of air to produce marked and uniform differences. It is of course still more unlikely that the presence of the particles of air which might remain after ebullition in open vessels, can have any sensible influence on the life of frogs, though it has been observed by Humboldt and Provencal to have a very manifest effect on the life of fishes. For this reason I have not had recourse to the process employed by them to expell from the water entirely the particles of air which remain after the ordinary process.

Though the preceding experiments failed in exhibiting any very striking or decisive results, they at least served to lead me to undertake others in which the quantity of water was larger, in order to augment the quantity of air.

On the 10th of November, 1817, the temperature of the atmosphere being 51, and that of the water 55°, I filled six glasses similar to those employed in the former experiments, with aerated water, and inverted them over the holes in the shelf of a pneumatic trough, containing 56 centilitres of water from the Seine. Under each of them I had placed a frog, and I put an equal number under glasses of the same dimensions, containing water which had been boiled, and cooled down to the temperature of the water of the trough. These I placed in saucers. The frogs which were in the water deprived of its air lived from three hours forty minutes to five hours 30 minutes. Those in the aerated water lived from six hours 43 minutes, to ten hours 40 minutes—being double the term of existence in the other case.

Having found, in these twelve experiments, that every one of the frogs which had been put in aerated water survived all those which had been placed in water deprived of its air, I think we are justified in regarding such striking and uniform differences as sufficiently decisive of the superiority of aerated water over water from which the air has been expelled, in maintaining the life of these animals. It does not, however, follow, that their existence may be thus indefinitely prolonged.

Though it did not appear at all probable that frogs, unprovided with organs for the specific purpose of acting upon the air of water, were capable of existing in it like fishes; and although Spallanzani had failed in his attempts to decide this point, I considered it incumbent upon me to neglect no means which

might determine how far the presence of air in water influences the existence of frogs in that element. With this view I made the following experiments :

On the 4th of December, the air of the apartment being at 42°, and communicating freely with the external air by means of a window which was kept always open, I filled a cylindrical glass vessel, of the capacity of 12 litres, with water from Arcueil, into which I put a male frog (R. Temporania.) To prevent it from coming to the surface to breathe, I employed a partition of iron wire, which I placed in the water. I left the apparatus in this state till the next day, when I found, as I had reason to expect from my former experiments, the frog alive. By means of a syphon which passed through one of the meshes of the net-work partition, I withdrew the water, leaving a small portion sufficient to keep the animal always in a state of submersion. I then filled the vessel immediately with fresh water, and continued renewing it in this manner every day. Not only did the frog live beyond the greatest term which I had obtained in my former experiments, and beyond the eight days during which, in the experiment of Spallanzani, a frog lived under water where the temperature was one degree, or half a degree above the freezing point, but it lived thus situated during the month of December, the whole of January, and to the 25th of February, being more than two months and a half. When it died, we had forgotten to renew the water, which till then had been regularly changed every day.

The temperature, during the whole of this experiment, had varied from 32° to 51°. The water was at this latter point when the animal died. During this long interval it never appeared to be deprived of sense or motion, not even when the temperature was at 32°;—an additional proof of what I observed on a former occasion, that frogs do not become torpid under water at the point of congelation.

Here, then, is a decisive experiment, which proves that a frog may exist for months under water, without ever coming to the surface to breathe, provided that liquid is in sufficient quantity and regularly renewed. It lives at the expense of the air which it finds in it; for if we neglect to change the water, or if we employ water from which the air has been expelled, death is the certain and speedy consequence. One of the most remarkable results of this experiment is, that frogs are truly amphibious animals, since they live on land by respiring the atmospheric air, and are capable of living under water by means of the air contained in that fluid, without being obliged to rise to the surface to be supplied with it from the atmosphere.

But in this respect frogs are much more remarkable than tadpoles, for although these young animals possess the double faculty of living by means of the air of the atmosphere and that which is contained in water, they cannot exist on land before the complete developement of their organs; so that, notwithstanding their double respiratory apparatus, they cannot be considered as amphibious, seeing that they are incapable of inhabiting both land and water.

But what renders this faculty still more extraordinary in this case, is, that it is enjoyed by frogs though they are not furnished with the double apparatus of lungs and gills. Their only organ of respiration with which we are acquainted is the pulmonary system. It would, therefore, be interesting to ascertain by what means the air of the water exercises its vivifying influence on the economy of the animal when plunged under water.

I may observe before proceeding farther, that it is possible for these animals to make the water enter into their lungs, and that these organs perform the office of gills, and thus act upon the air of the water. This point may be determined by observing them under water in a transparent vessel. We know that, from their want of ribs, the mechanism of their respiration differs from ours. To supply this deficiency, they swallow the air, and make it pass into the lungs in such a manner, that their inspirations are rendered evident by the movements of the throat in the action of deglutition. I therefore paid particular attention to this circumstance in frogs, when immersed under water. If we count the movements of the throat in the air, we shall find that a frog makes from 40 to 100 inspirations in a minute. The moment we plunge it into water these movements cease; and, however long the animal remains in this situation, these movements will not be renewed, except in very rare cases indeed. During the whole period of two months and a half the experiment lasted in which the frog lived under water, I never observed a single action of deglutition. And, admitting that the animal did sometimes breathe when it was not in my power to observe it, what influence could a few inspirations have had, in such a long period, on the life of an animal which, in the air, inspires so frequently?

An interesting experiment of M. Humboldt is analogous to the one which I have just related, and confirms its results. Having counted the number of inspirations performed by a frog in a given quantity of atmospheric air, he introduced into it a measure of azote, and immediately perceived the number of inspirations diminish, and on every successive addition of

azote they uniformly decreased. But neither azote, nor hydrogen, nor carbonic acid, are so powerful as water in arresting the inspiration. I have had an opportunity of satisfying myself on this point by experiment; and in some hundreds of experiments which I made on the asphyxia of frogs in water, I have in very few cases been able to discover any movements of deglutition, nor has Spallanzani, in his numerous researches on frogs, observed any.

These experiments might be regarded as sufficient to show that it is not by means of the lungs that these animals receive the influence of the air in water, but the fact is too important not to be submitted to a more rigorous examination. It was on this account that I instituted the following experiments.

If frogs live under water by inspiring that liquid, should we not find some of it in their lungs? After having waited until they no longer exhibited any signs of life on being pinched, I have withdrawn them from the water, and though I have examined their lungs with great care, I never could detect any water in them. I have repeatedly made this experiment with the same result, and Spallanzani, who opened a great number of frogs that had been asphyxiated, never found any water in their lungs. It might here be objected, that the animals died in the act of expiration, and hence the reason that no water was found in their lungs after death. To remove this objection I placed ten frogs under glasses inverted in a trough containing 56 litres of water, and opened them at different periods of their existence under the water, but never could detect any of that liquid in their lungs.

In expiration frogs compress their sides. Now, if a few expirations are sufficient to empty their lungs, it might be supposed that, when we take a frog out of the water for the purpose of examination, it will have had time to expel the water from its lungs before they could have been exposed to view. The following observations, however, prove the contrary:—When we put a frog into a vessel of water inverted in a trough, we presently observe bubbles of air escaping from its chest; these bubbles continue to appear at different intervals, and frequently an hour elapses before the lungs are completely exhausted of air. Again, when we suddenly open the sides of a frog in the atmospheric air, taking care not to wound the lungs, we do not always find air in them. In this case, perhaps, the pain and terror which the animal suffers, and the exertions it makes, are sufficient to expel the air in so short a time.

Thus it would appear that the air contained in water does not act upon frogs which inhabit it, through the medium of

the lungs. It is to the skin therefore that we are to refer the action of the air, for this is the only organ which is in contact with the water.

What then is the nature of this action on the skin? Is it the same as what takes place in the gills of fishes? This question I shall examine on another occasion. For the present, every thing which concerns the changes which the organs effect in the air, is foreign to my undertaking. When I shall have terminated what regards asphyxia, I shall then enter on the examination of the other questions which present themselves in the course of the inquiry. I shall here therefore confine myself to the facts which I have just established, that frogs can live for months under water by means of the air which they meet with there, and that the skin is the organ which receives the influence of that fluid. I shall merely add, that while they live in water which is daily renewed, we observe the vessels of the web of their feet filled with red blood.

In the preceding experiments the water surrounding the frog was in a state of rest. Are these animals capable of existing submersed in running water? This question might appear unnecessary if Spallanzani had not concluded, from his experiments, that they died sooner under running water than in the still water of his vessels. I have endeavoured to decide this question in the following manner.

On the 6th of November, I put a frog into a net, from which I suspended a weight, and having lowered it into the Seine in a place where there were ten feet of water, I fastened it to a fixed boat. On the 11th I drew up the net, and found my frog alive and well. I returned it into the water, and on withdrawing it on the 17th, I found it as lively as before. When this experiment was going on, frogs which were in vessels containing a decilitre* of water which was not changed, lived only a few hours.

It appeared probable that the aquatic salamanders, as well as frogs, were endued with the power of living under water at the expense of the air which it held. This I determined by experiment, and found that the same was the case with the toad, though it is naturally a terrestrial animal.

Having determined that this faculty belonged to the three genera of batracians which I submitted to experiment, it became important to investigate the conditions capable of influencing them in this respect. It therefore was necessary to ascertain whether these animals enjoy the same advantage in all seasons, and how far they are affected by temperature.

* A decilitre is equal to one-tenth of an English quart.

It would seem that at the period when frogs leave their retreat, about the beginning of spring, they are no longer in a condition to exist under water. At this time a remarkable revolution takes place in these animals. They are in a state of the highest excitement, and particular parts of their body undergo evident changes. The paunch of the male swells and grows livid in a most singular manner. This change announces the epoch of their loves. I wished to ascertain if at that season they lose or retain the power of existing under water.

On the 7th of March 1816, the water being at 46°, I fixed a frog by the foot to the bottom of an earthern vessel containing twenty-eight litres* of water from Arcueil, taking care, as in the preceding experiments, to change the water daily. It lived in this situation twenty days. The temperature of the water, during the whole of the time, never exceeded 50°.

Frogs therefore are capable of living under water which is regularly changed, a considerable time after the period of their appearance in spring. I have also determined by experiment that they enjoy the same faculty in autumn, at the period when they usually disappear. But are we to consider this sort of existence as unlimited during these seasons, or during the whole year? Are we to regard any other influence besides that of the *quantity* of aerated water, or does *temperature*, which we have seen to exert such powerful influence on reptiles immersed in determinate quantities of water, produce any effect upon them when the quantity of water is indefinite?

We have seen that in experiments made in the spring of 1816, a frog died the twentieth day after living under water which had been regularly renewed, the temperature of which scarcely ever exceeded 50°. In autumn, in the month of October (1817) a frog lived eleven days under water in the glass vessel already described; during that time the temperature fluctuated between 46° and 53°, and it was when the water was at 53° that the animal died. These experiments led me to perform others, to ascertain if an equally low temperature could influence the existence of these animals under water containing air, and properly renewed. On the 12th of April, the water being at 53°, I put a frog into a tub containing fifty-six litres of water from the Seine, and kept it at the bottom by means of a thread, with a weight appended to it. Next day I found it dead. I repeated this experiment several days following, with the same result; the temperature was raised during the experiment to 57°.

* A litre is equal to an English quart.

Thus frogs readily live in vessels containing twelve litres of water without ever coming to the surface, provided the water is changed every day, and its temperature is preserved between the freezing point and 50°. At this point, however, they can hardly exist; and if the heat is raised to 53° or 57°, they soon perish. These effects of temperature correspond with those which are related in the first Memoir, and are perhaps still more striking.

In the experiments which we have just related, the animals were kept in water which was renewed every twenty-four hours. But do the same deleterious effects result from such a slight augmentation of temperature, when they are kept under water in rivers or ditches? When they are not restrained, there is nothing to prevent their coming to the surface when the temperature of the water reaches that point. Were the animals therefore confined in such a manner as to prevent them from coming to the surface to breathe, would they yield to the same temperature which proved so fatal to them in the vessels in which I submitted them to experiment? At first view both cases appear to be the same; for in both, the quantity of water is unlimited, seeing that that in the vessels is changed. But the renewal of the water once a day may not be sufficient for the animal, when we consider that in a river it is continually changing. As such a difference in the circumstances might influence the result, I wished to satisfy myself on the subject by experiment.

On the 12th of April, I put seven frogs and two toads into a wicker basket, and lowered them into the Seine. The temperature of the water at the surface was 53°, at which point, it will be recollected, frogs could not live when confined in fifty-six litres of water which was renewed every twenty-four hours. On the 20th of the month I withdrew them, and out of seven frogs, four were dead; the other three, with the toads, were still alive. The temperature was then at 55°.

There was therefore a decided difference in the results obtained in the river, and those which took place in the vessels, the running water at 53° proving much more favourable to the life of frogs. This difference is not attributable to a difference of temperature at the surface and at the bottom, for in several experiments in which water inclosed in a bottle was sunk to the depth of the basket, its temperature was uniformly found to correspond with that of the surface.

Of the two toads which I had put into the basket, one was found dead on the 5th of May, and the other on the 19th of that month, the water being at 62°. On the 13th of June one

still survived of the seven frogs which had been put into the water on the 12th of April. In that interval of upwards of two months, the temperature varied from 53° to 71°. More than the half of them died during the first eight days, when the temperature was between 53° and 57°, one only having held out till the heat reached 71°.

In comparing our experiments in vessels, with those which took place in the river, we see that the latter situation is the most favourable to the existence of the batracian reptiles. Yet in these two cases the same water was employed, and the temperature was the same. The only appreciable difference which we can point out, is the continual renewal of the water in the running stream.

There are three conditions therefore which powerfully influence the existence of frogs when living under water. 1. The presence of air in the water. 2. The renewal of that liquid; and 3. Its temperature.

The relative influence which these several circumstances exert, merits particular attention. The first of them we have examined with great care, and have established its power of prolonging the existence of frogs when confined in water. But in what way does temperature act in this case? Considering that the air is the principal agent in prolonging the existence of these animals under water, it might be supposed that the augmentation of temperature operated by diminishing the quantity of that fluid. But the temperature which proves fatal to frogs residing under water does not in fact alter the proportions of air which it holds. From the labours of Humboldt and Provencal on the respiration of fishes, we learn that the water of the Seine, in the different analysis performed by them in the months of September and February, contained the same sensible quantities of air. I have myself observed the temperature of the Seine to vary from the freezing point to 60° and 62°, a temperature superior to that which proved fatal to the greater part of the frogs which had been submersed in that river.

As the quantity of the air then remains the same, and as the temperature alone alters, it is to that cause that we must attri- the difference in the results.

The experiments related in my last memoir agree in every respect with the facts which I have now announced. I proved that the existence of frogs under a determinate quantity of water is abridged in proportion as the temperature is augmented from 32° to 107°, the point at which they speedily perish; and that through the whole extent of this scale, the variation of a very few degrees is capable of producing a considerable difference

in the term of their existence. I have now shown that the air contained in water has a contrary effect to that which an ascending temperature exerts; that it tends to prolong the existence of these animals, and that the term of their existence increases with the quantity of aerated water under which they are confined.

In a limited quantity of water, which is renewed once a-day, and the temperature of which is kept between 32° and 50°, the heat is not high enough to counterbalance the vivifying action of the air, but when it amounts to 50° or 53° the deleterious influence of the elevated temperature overpowers the salutary agency of the air, and the animal dies, if the quantity of the air is not increased. We may augment the quantity of the air by supplying a larger volume of water in which it is present. It is on this account that frogs under running water resist a temperature which, in vessels whose contents were only renewed once a-day, would prove fatal to them. But as the quantity of air which water holds is small, the influence of the renewal of that liquid in counteracting the effects of an elevated temperature is very limited. There is only one means, therefore, by which these animals can resist it, viz. by coming to the surface to breathe, without which, most of them would perish under water at the low temperature of 53° and 57°.

These experiments exhibit some important relations between the quantities of air, and the degrees of temperature. We have seen that these two circumstances exert an inverse action, and that we can, within certain limits, balance the effects of the one by means of the other. The small quantity of air contained in water under the temperature of 50°, which is sufficient to sustain the life of these reptiles, at the same time effects a remarkable change in their mode of existence. Every one knows the extreme agility of frogs, and how opposite they are in this respect to toads; but their residence under water does away with this difference, which alone might serve to distinguish them. It does more, it makes them so slow in their motions, that they become more sluggish than turtles. The slightest noise, which, while they breathed the atmosphere, used to strike them with terror, no longer makes any impression upon them. The light, which on other occasions so readily brought them to the surface, has now lost its wonted power. Nevertheless, at a low temperature they enjoy sense and voluntary motion, while to air and temperature they show extreme sensibility. Their residence under water, in short, by withdrawing them from the atmosphere, so completely changes the manners of these animals, that, but for their form, they would be supposed to belong to another species.

From the experiments detailed in this Memoir, it follows:

That the air contained in water prolongs the life of the batracian reptiles when submersed in that liquid.

That within certain limits their existence is extended in proportion as the quantity of water employed is great; that in ten litres of aerated water which is renewed once in the twenty-four hours, frogs can exist several months, if the temperature is kept within 32° and 50°; that in this case when the temperature is raised to 53° and 57° they die in the space of one or two days; that a very small number in a similar situation can resist a heat of 69°.

That frogs do not respire the air of the water by the lungs, but that it supports the life of these animals by acting upon the skin.

That the action of the air and that of temperature produce opposite effects upon these reptiles when confined under water.

That between 32° and 50° the presence of air in sufficient quantity in water, counteracts the deleterious influence of an elevated temperature, but that at 53° the influence of temperature counteracts the vivifying action of the air contained in water.

That in general these animals, to enable them to live in water of a temperature above 50°, are obliged to come from time to time to the surface, to breathe the atmospheric air.

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Art. V. *Traité des Maladies des Yeux, avec des planches coloriées représentant ces maladies d'après Nature, par A. P. Demours, Médecin Oculiste du Roi, &c. &c.* 3 tomes in 8vo, pp. 1586. *Planches avec leurs explications, et la traduction de l'ouvrage de Soemmerring, intitulé Icones Oculi Humani.* In 4to. Paris, Crochard, 1818.

The first of these volumes in octavo consists of a Treatise upon the diseases of the eye, the second and third volumes are wholly made up of cases, and the quarto volume includes a translation of Soemmerring's work upon the Anatomy of the Eye, copies of his excellent plates, and M. Demours' own plates illustrative of ophthalmic diseases.

The instant that we took up M. Demours' plates, which represent the diseases of the eye, it struck us that we had a set of figures before us taken from enamel models, so unlike are these representations to what appears in nature. This opinion

was, indeed, rendered somewhat doubtful, when we found M. Demours in his advertisement assuring his readers that the plates in question were executed from drawings made in the presence of the patients. In the next paragraph, indeed, we found him beginning to talk of his *dessins définitifs*, by which we supposed him to mean the fanciful and even sometimes ludicrous combinations, which the engravings present. M. Demours appears to have thought that the representation of a single disease of the eye, merely as it existed in nature, would have been but a poor offering to his readers, and has therefore combined several diseases in each figure, and thus turned his whole set of plates into a kind of jumble. At last, in the Preface, the fact comes out, that it really was from models that these plates were taken, and the members of the profession are politely invited to wait upon M. Demours, that they may see the models, and judge whether the hundred and fifty figures, which he has given from them, have been executed with fidelity. The engraving and printing of the plates are excellent, and we only lament that Messrs. Laguiche, Langlois, and the other ingenious artists whom M. Demours employed in this ridiculous and worse than useless labour, were not under better direction.

This monstrous history of M. Demours' plates is sufficient to make any one lay his book aside, who knows even no more of the diseases of the eye than what may be gathered from the posthumous work of Mr. Saunders, or from the review which we gave in our last number of Professor Schmidt's description of the various species of iritis. We do not deny that models may be made in enamel of a closed or of a dilated pupil, of a staphyloma or of a speck on the cornea, nor even that such models may be useful to beginners; but to give drawings from such things, when living examples of these diseases could almost as easily be procured, is a piece of folly which could scarcely have been expected. To represent the different species of ophthalmia;—the shades of colour, the minutiæ in the course, the manner of anastomosis, the size of the blood vessels, seen in the conjunctiva, the sclerotica, the cornea, and the iris;—or to represent the different kinds of cataract, with even tolerable exactness and liveliness, is a task which the elaborate pencil of the miniature painter can with difficulty accomplish. To express the characteristic appearances presented by the eye during these diseases by means of the enameller's art, we have not the slightest hesitation to say is completely impossible; and he who believes it to be possible, can have come to such a belief only in one way, namely, through his ignorance of the diagnostic symptoms of the diseases of the eye.

The cases which M. Demours has published, have very narrowly escaped making as absurd an appearance as his plates. It would appear that the histories of the patients who had been treated both by his father and by himself, were all written in the good old language of the humoural pathology, and that the terms *âcreté, épaississement du sang, humeur rentrée,* still stood their ground in every page. Finding that even the French were resigning the humoural pathology to oblivion, what did M. Demours imagine, but to translate all his cases, and his father's too, into a more fashionable language—to have them cut down like an old coat, dyed with a fresh colour, and made up into a new shape! The friends of M. Demours, afraid lest his appearance in this proposed masquerade might be even more ridiculous than if he continued to wear his old suit of fustian, very properly persuaded him against the change.

The anatomical description of the eye which is given in these volumes, is principally contained in the explanations of Soemmerring's plates, of which M. Demours has given well-executed copies. What M. Demours has given of his own upon the anatomy of the eye is scanty, and limited to a few points. Among these are the form and structure of the cornea. With regard to its form, M. Demours maintains that the cornea is not a circular segment, but the segment of a hyperbolical spheroide, and endeavours to explain the origin of this conformation by the continual compression exercised by the straight muscles upon the globe of the eye. Without pretending to decide upon this point, we must allow that M. Dumours' opinion respecting the growth of the cornea appears to be well-founded. He believes that the cornea increases chiefly at its circumference, that is to say, where it is united to the sclerotica. In proof of this opinion, M. Demours relates the case of a child, who, at the age of six months, had a violent inflammation of the eye, followed by abscess of the cornea, evacuation of the aqueous humour, and adhesion of the iris to the cornea near the circumference of the sclerotica. At the age of eight years, this adhesion was at the distance of a line only from the centre of the cornea, whence it follows that the growth of the cornea had taken place between the adhesion and the edge of the sclerotica.

Upon the motions of the iris, M. Demours seems to be in doubt whether to follow the opinion of his father, which has been revived by M. Maunoir, and maintain the muscularity of the iris, or to adopt the doctrine of the school of Bichat, which places that membrane among the erectile tissues of the body.

In the first chapter of the second section, M. Demours commences his account of the diseases of the eye, and that chapter

may serve as a specimen of the general manner of the work. It is entitled "Des phlegmasies des glandes de Meibomius, et de la marge des paupières;" but besides these very important diseases, this chapter comprehends all that M. Demours knows concerning inflammation of the periosteum of the orbit, and abscess in the fatty cellular substance of the orbit. The reader may well wonder what connection there can be between the inflammation of parts so different; but the fact is, that it seems to matter little to M. Demours' under what arrangement his remarks are brought forward. He scarcely ever thinks it necessary to give any connected description of the symptoms of the diseases of which he speaks.

We believe that it is the organ of invention which Gall places upon the side of the head, and which he represents authors at a loss as so frequently exciting with their finger-ends. M. Demours probably felt the inflammation of the periosteum of the orbit to be a subject beyond his powers, and began this mode of stimulation, for after two short paragraphs upon the inflammation of the periosteum, he thus proceeds:—

"Les insectes que l'on trouve si ordinairement sur la tête des enfants; agissent-ils seulement par l'irritation que produisent leurs piqûres, on font-ils l' effet d'une foule de petites sangsues ? Les doigts de l'enfant, forcé à se gratter pour appaiser le prurit que ces piqûres lui occasionnent, déterminent-ils sur le cuir chevelu une irritation utile, qui, en se déplaçant, peut se porter sur les yeux ? Ce qu'il y a de certain, c'est que trés-souvent la disparition subite, même spontanée, de ces insectes, donne lieu à des phlegmasies de l'œil, qui, chez les enfants, se manifestent particulièrement aux parties extérieures de cet organe." (Obs. 14).

The case to which we are referred contains the following practical advice:—

"Si, après trois semaines, le gonflement des paupières n'est pas entièrement dissipé, le meilleur moyen auquel on puisse recourir sera de lui rendre les pous qu'on lui a supprimés, de les conserver jusqu' à ce que tous les accidents soient cessés, et de ne les detruire que peu-à-peu par le moyen du peigne."

The next chapter treats of wounds of the exterior parts of the eye; but M. Demours has lost all the courage which led him to recommend his bold practice in the last case, and trusts a formidable wound of the orbit to the letting of blood from the feet.

"Si l'on était appelé pour faire l'extraction d'un corps étranger profondément introduit dans l'orbite à travers les tégumens et le muscle orbiculaire, il faudrait ne faire d'abord que de légers essais, et si la difficulté était considérable, il serait mieux de temporiser; mais ces

cas sont rares, et je crois que des saignées du pied réiterées doivent prévenir une funeste terminaison."

Might it not be proper in this case also, to try what might be the effect of the "piqûres d'une foule de petites sangsues?"

One of the least objectionable parts of M. Demours' work is the third section, which treats of the diseases of the lachrymal sac and duct, or as he chooses to style these parts, of the lachrymal syphon. Upon this subject M. Demours has tolerably correct notions, and from his practice in these diseases he has very properly dismissed much of the farrago of machinery employed by Desault and Cabanis. With Bichat, M. Demours maintains that the nasal duct is never obliterated, but that like other mucous canals, when no longer traversed by its natural fluid, it becomes only contracted; and he adopts the practical conclusion of the great physiologist, that they are in the wrong who believe it impossible after a time to re-establish the natural route of the tears, and therefore have recourse to the formation of artificial passages.

M. Demours is an advocate for the probes and syringe of Anel. He quotes so many instances of cure after the use of these instruments, and to them attributes with so much faith the cessation of the watery eye in General B. Madame D., and so on almost throughout a complete alphabetical series of his patients, that we fear any thing which we could say in favour of the laying aside of these childish and mischievous implements, would have but little effect in inducing him to change his opinion. When the probes and syringe fail, M. Demours has recourse to the use of a style, not materially different from that of the late Mr. Ware; and he appears to have experienced the same good effects from this simple remedy, which have been attributed to it in England.

We are pleased, to find that in certain cases M. Demours does nothing, a thing very difficult for a system-writer. Speaking of obliteration of the lachrymal canals, he says:—

"J'ai dans mon Journal une vingtaine d'exemples de cette oblitération complète, contre laquelle je conseille de ne rien tenter."

And again upon the subject of caries of the os unguis:—

"On a rempli des volumes de questions mal posées; on a dit: La carie des os est souvent la suite de la fistule lacrymale. Faut-il brûler l'os unguis? faut-il le percer ou l'enfoncer? etc. etc. Tandis qu'il fallait demander: L'os est-il mis à un une fois sur cent? Dans les cas où cela arrive, y a-t-il carie une fois sur vingt? S'il y a carie, au lieu d'avoir recours aux méthodes douloureuses, peut-on tirer un meilleur parti, mais au moins un aussi bon, de l'operation la plus douce? Et

même, dix-neuf fois sur les vingt, les simples injections d'eau pure, faites par le point lacrymal ou par l'ouverture du sac, s'il est rompu, ne donneront-elles pas un résultat plus avantageux ?"

We think this section one of the least exceptionable; yet it is not free from the nonsense with which the work abounds. Take for instance the story of Madame Lermina the baker's wife, in whom the mucus discharged from the lachrymal sac was so thick and tenacious, that M. Demours believed the fine dust suspended in the atmosphere of Madame's shop, to have been actually absorbed by the puncta, and carried into the lachrymal sac.

The fourth section treats of the inflammatory diseases of the eye-ball. The first chapter of this section is devoted to the causes of ophthalmia, and contains a good deal which might have been interesting, had Schmidt, Saunders, and Beer never written; but which, when compared with the works of these authors upon the same subject, appears extremely imperfect. Though there are some remarks of M. Demours, which may be read with advantage by those who have not access to the writings of these authors, yet the want of systematic arrangement takes away much from the value of the whole section. On ophthalmia from the presence of foreign bodies upon the surface of the eye-ball, or under the eye-lids, M. Demours gives some minute and useful directions.

M. Demours' treatment of acute ophthalmia merits, upon the whole, the praise of approaching to active practice. He lets blood with greater boldness than we should have expected from what is known of the extremely sparing employment of that remedy in France. Yet he continues to bleed from the foot in preference to the arm, and would rather let some ounces to-day, and some ounces to-morrow, than take the whole quantity at once. Neither does he follow up his general bleeding by the immediate application of leeches to the temple and lower eye-lid, which we believe to be the better plan; but delays the latter remedy for several days. His feeble treatment of ophthalmia in young children forms a striking contrast with the boldness of Mr. Saunders, who did not hesitate to apply leeches to the eye-lids of infants newly born; and we fear that in many cases the dressing of a blistered neck with a buttered beet-leaf, as M. Demours recommends, will fail *d'appaiser l'orage excité aux yeux.*

Upon the subject of internal ophthalmia, by which appellation M. Demours speaks of iritis, he mentions this very interesting fact in the history of the treatment of this disease, namely, that he began the use of the extract of belladonna

with the view of preventing the contraction of the pupil, so far back as eighteen years ago, and that thirteen years ago he published a paper upon the subject, under the title of *Application des effets de la belladone au traitement de plusieurs maladies des yeux.*

The fifth section treats of the lesions which result from inflammation; under which head the author includes specks, abscess, ulcers, and fistula of the cornea, hypopium, procidentia iridis, changes in the form of the globe of the eye, pterygium, and closure of the pupil. We are by no means satisfied with the arrangement of pterygium among the consequences of inflammation, being convinced that it is very rarely a sequela of ophthalmia. When speaking of closure of the pupil, M. Demours makes some interesting remarks upon the use of belladonna. He appears never to have witnessed the effect of that remedy in cases of contracted pupil, which has been noticed by some other practitioners, and in particular by Professor Beer, namely, of producing still farther dilatation of the iris instead of the contraction which was hoped for. On the contrary, M. Demours has derived beneficial results from its long-continued employment in such cases.

"Souvent on n'est consulté que pour l'effet que existe après l'entière disparition des phlegmasies ou des blessures qui ont occasionné le rétrécissement de la pupille. Dans ces cas, je vois ordinairement le seul usage externe de la belladone, repété de quatre en quatre jours pendant un an ou plus, élargir la pupille, sinon complétement, ou moins suffisamment pour améliorer sensiblement l'etat de la vue. Si le rétrécissement est très-marqué; si plusieurs points de la marge pupillaire de l'iris sont adhérents à la capsule du cristallin; s'il existe quelques points d'opacité vers le centre de cette capsule ou du corps lenticulaire, l'effet est plus équivoque; mais, en insistant, on finit par obtenir un changement en mieux."

The sixth section comprehends lesions of the globe of the eye from external causes, a subject which M. Demours illustrates by the recital of a considerable number of interesting observations.

The nervous diseases of the eye form the subject of the seventh section. Of amaurosis, M. Demours acknowledges a sufficient number of causes, but he has felt the difficulties attending the arrangement of the different varieties of this disease, and declined attempting to resolve this important question, What is the seat of an amaurosis, judging from such and such symptoms? In the chapter upon mydriasis, or dilatation of the pupil, a disease which M. Demours asserts to have

been first accurately examined by his father, we find a number of facts which we believe to be not generally known.

The last section treats of exophthalmia, cataract, muscae volitantes, and artificial pupil; and is certainly the most imperfect part of the whole book. Method and precision are in no subjects more necessary than in those of cataract and artificial pupil. The different genera and species of cataract would require first of all to be carefully described; then the principles upon which the several methods of operating for cataract are founded, ought to be discussed; and lastly, the methods of operating themselves to be explained. The cases which call for the formation of artificial pupil would require to be enumerated with some minuteness, and to be classed according as they are fitted for this or for that operation; then the principles of the three methods of operating ought to be clearly laid down, and the rules delivered for the execution of each. Nothing of all this has M. Demours fulfilled. In his chapter upon artificial pupil, the names of Schmidt and Beer occasionally make their appearance. These are authors which M. Demours has certainly never read.

This pompous work of M. Demours furnishes a melancholy proof that he is not to be regarded as the man of experience, who merely has seen hundreds of patients, or is able to say that he has written out and arranged *plusieurs centaines de Mémoires à consulter*, and politely invite the world to look into his *cartons* and read the *journaux de pratique* of his father and himself. He who has seen twenty cases, and been able to distinguish their differences with accuracy, to seize their points of resemblance, to analyse and to class these twenty cases for himself, may be regarded as a man of considerable experience; while the practitioner of mere *routine*, who distinguishes nothing, examines nothing, makes out nothing for himself, but sees thousands of patients through the opinions and through the errors of others, is wholly unworthy of that appellation. What is the worth of M. Demours' two thousand cases, the results of fifty years of his father's practice, and twenty of his own? Almost nothing. The description of a single disease by a Saunders or a Schmidt, is worth the whole cart-load of M. Demours' *cartons*.

## Art. VI. *Experiments upon the Formation of Callus.*

*By G. Breschet, M.D. Secretary of the Société Médicale d'Emulation de Paris, &c.*

*And L. R. Villermé, M.D. Member of the Société de Médecine de Paris, the Société d'Emulation," &c.*

(Communicated by the Authors.)

We may refer to three distinct classes, the opinions which have at various times been entertained and rejected on the Formation of Callus. It has been supposed to be produced either 1st. by a glutinous matter effused between the fragments which it serves to unite; 2d. by the periosteum and the medullary membrane; or 3d. by little granulations rising on the surface of the osseous extremities, and forming a mutual cicatrice.

There are many errors, we conceive, into which the authors on this subject have fallen.

1. One class of writers have attributed the formation of callus to some single operation. Duhamel, for example, ascribed it solely to the swelling of the periosteum, and to its ossification in layers proceeding from the internal to the external surface. Bordenave, Bichat, &c. conceived that the granulations alone, uniting and receiving a deposition of phosphate of lime, constituted callus.

2. Another, and by far the most numerous class, have compared the formation of callus to the process of common ossification. Assuming the principle, and then reasoning from it, they have attempted to explain the formation of callus by the developement of the bones in the fœtus, and, in return, to throw light on common ossification, by a reference to what takes place in the formation of callus, and the production of cylinders of bone round the sequestra in cases of necrosis. This reproach may be made to Haller, although he does not deserve it so much as Duhamel, Scarpa, &c.*

3. Many have contended that a simple fracture unites in the same manner as do the fractured extremities of a bone when exposed to the air, or left in contact with some extraneous substance. This appears to have been the opinion entertained by those who attributed the formation of callus to granulations only.

* The authors of this Memoir do not mean to assert, that ordinary ossification and accidental ossification do not tend mutually to explain the phenomena of each other; but their meaning is, that to represent these two ossifications as exactly similar, is to err as widely as to suppose that there existed no analogy between them.

4. Those who have investigated the subject have not, at least in the greater number of instances, repeated their observations at different periods during, and after the formation of callus. Duhamel, for instance, seldom extended his experiments beyond the fifteenth day after the fracture; Troja beyond the eighteenth; Dethlecfries beyond the twenty-fifth; Mr. Howship, who has lately published a very interesting paper upon callus, did not pursue his beyond the thirty-second. On the other hand, Bordenave examined a case of long standing, and declared that neither externally or internally did he observe any trace of an osseous ring around the united fracture.

However different these opinions may seem, we conceive that the discordance of the authors is often more apparent than real, and that it frequently arises from the deficiency of multiplied obdervations, made at various periods, during and after the consolidation of fractures. Our experiments, undertaken with a view of supplying this deficiency, have been numerous. They were made on dogs and pigeons; in the former animals we have accurately continued our observations from the moment of fracture through the following seven months and a half.

Few questions have given rise to more speculation or greater difference in opinion than that which forms the subject of the following experiments. Our object is to detail facts, and not to support or erect a system. We reserve to a future period, the publication of the particular facts which our experiments have proved, and on which the results at present communicated are founded.

### FIRST STAGE.

From the occurrence of fracture to the sixteenth day, as observed in dogs.

*Cellular Substance.*—At the moment of fracture, the fragments and splinters of bone distend, and tear the lamellæ of the cellular membrane; extravasation of blood is the immediate result, and ecchymosis follows. A red and vascular network, extending even into the substance of the periosteum, soon appears in that part of the cellular membrane affected with ecchymosis. This membrane gradually loses its power of being separated into soft and porous lamellæ round the fracture, where it unites the muscular fibres in a firm and close manner. Becoming, every day, more and more dense, and losing the colour which the effusion of blood had imparted to it, the cellular membrane acquires a degree of induration which extends even between the fascieulæ of muscular fibres. These, no longer distinguishable, lose their redness, and acquire a consistence which serves to confound them with the periosteum. From this moment,

neither the individual organization, nor even the nature of the different parts in the immediate vicinity of the fracture, can be distinguished. Ten days are often sufficient to bring on this state of parts. Viewed through a magnifying glass, the cellular membrane presents an immense quantity of red capillary vessels, forming a net-work, the interstices of which being wider at some places than at others, give it a spotted appearance. This appearance is visible even to the naked eye.

*Muscles.*—Some muscular fibres are occasionally lacerated at the moment of the fracture, and getting between the fragments of bones, these bruised and torn fasciculi are retained between the inequalities of the broken surfaces, and become adherent to them by means of extravasated blood, and a glutinous ropy matter which is in small quantity. Some days after the occurrence of the fracture, no more of these portions of muscular substance are to be found in this bruised state. The muscles then adhere strongly between each other, and to the neighbouring parts, by the above-mentioned induration of the cellular membrane. At other times their fasciculi are separated by blackish blood; and amongst the vessels distributed to them, some are very much injected with blood, and enlarged.

The muscles surrounded by the indurated part of the cellular membrane, and especially those which pass immediately over the fracture, or at least some of their fasciculi, often acquire, but seldom before the tenth day, a very remarkable degree of consistence, and a whitish grey colour. These they preserve as long as this indurated state of the cellular membrane lasts, to which indeed this consistence of the muscles must evidently be attributed.

In our experiments upon pigeons we have observed, that from the fourth day, some of the muscles which passed over, or were inserted close to the fracture, became paler and denser than the others; that on the sixth day the muscular fibres nearest to the fracture, approached very much in colour and consistence to the indurated and almost cartilaginous cellular membrane, with which in fact they were almost confounded; and lastly, that a very sensible diminution in the latter state of the parts took place between the tenth and seventeenth day.

*Periosteum.*—The periosteum is broken with the bone, and at the same place. If the extremities of the fractured bone ride, the periosteum is bruised where these come in contact; it is soon destroyed along the course of the *chevauchement*, and becomes detached. A day, or even some hours, are sufficient to produce this denudation of the bone; and in dogs we have seen this state continue to the fourteenth day. Immediately after this

denudation, but only during the early days of the fracture, the flaps of the periosteum, softened by the repeated bruising which they sustain, swoln, and purplish, are seen forming a sort of fringe, which adheres to the surrounding portions of flesh. The periosteum in the vicinity of the fracture soon acquires a deeper colour, and may be very easily separated from the bone where there is no tendinous or aponeurotic insertion. From the second to the fifth day we observe, between the periosteum and bone, a viscous matter, or sort of reddish serosity, but in so small a quantity that its existence might be doubted if it did not become evident by the kind of filamentous and very delicate web which it forms, when we lift the periosteum. This webby appearance is immediately succeeded by a fluid.

On the tenth day of the fracture, a red vascular net-work is observed in the substance of the periosteum, which now swoln and indurated in the vicinity of the fracture, is about two thirds of a line in thickness. It offers a more than usual degree of resistance to the knife; and, as we have already observed, it adheres to the muscles and other soft parts, by means of cellular substance of a remarkable consistence, and with which it is soon confounded. At this period, if we attempt to separate the periosteum, we find that there is an extraordinary adhesion between it and the extremities of the fracture, or even that the periosteum is continued into those cartilaginous inequalities which surround these extremities, and rise above their level.

Opposite to the space between the extremities of the fracture, we raise with the periosteum, or tear away a substance which shall be more particularly described when treating of the *substance intervening between the extremities of the fracture.* We can now no longer perceive the fringes of the periosteum abovementioned. These have become intimately blended with this intervening substance or with the indurated cellular membrane by which these parts are covered.

In pigeons, the same results were obtained at earlier dates.

*Medullary Organ.*—The medullary tissue is ruptured along with the bone, and blood is effused from the numerous vessels distributed to its substance. This blood varies in quantity. If it be considerable, it forms a clot, which is continuous with the substance of the medulla. The softness of this substance, and the violence it always undergoes at the moment of the injury, readily account for the ecchymosis observed in the texture of the marrow during the early days of the fracture. The transition from this to its natural state, is marked by little drops of

extravasated blood, which are more widely scattered in proportion to their distance from the fracture.

The colour of the marrow, from the occurrence of the fracture till the fourth day, is of a brownish violet; after that period it becomes of a bright red, acquires consistence, and is seen to be injected with numerous blood-vessels, from the inflammation by which it is attacked. It then shoots, or has a tendency to shoot, between the fragments of bone, generally forming reddish and agglomerated granulations, and is continuous with a sort of fibrinous and downy substance, which is seen on the surface of the fractured extremities. If an incision be made into the marrow at its connection with this substance, it often appears to resemble it in structure; and the whole has very much the appearance of a mushroom, the stem of which is within the medullary canal.* The marrow, acquiring every day a greater degree of density in the vicinity of the fracture, assumes a whitish-grey colour, though for a considerable time red points and streaks are visible in its substance. Sometimes at its connection with the above-mentioned fibrinous and downy substance, it appears lobulated, presenting lenticularly-shaped grains united together by filaments of a remarkable tenacity. Lastly, it appears to adhere, in the vicinity of the fracture, with somewhat greater force to the parietes of the medullary canal, than elsewhere. The experiments on pigeons gave similar results; only that the several phenomena were developed at a much earlier period.

*Medullary Canal.*—A narrowing of this part takes place in the vicinity of the fracture, a few days after the occurrence of the accident. This diminution appears to be occasioned by a reddish fleshy substance, continuous with the bone, denser and more firmly adherent at the edge of the fracture than elsewhere; a substance which becomes cartilaginous, then osseous, at periods which we shall mention hereafter.

We have not observed this narrowing before the tenth day in dogs. It may certainly, however, begin a little sooner, because even at that period, the substance upon which this contraction depends, had almost already acquired an osseous character. We have never failed to find it after the fourteenth day in these animals.

*Surfaces of the fractured extremities and substance between the fragments, twenty-four hours after the fracture.*—The surfaces of the fractured extremities usually exhibit only a little coagu-

* We have seen in a child, eight days after the fracture, the marrow forming a reddish lobulated knob, much firmer than it usually is.

lated blood. The quantity is sometimes considerable, in which case a clot may extend from the marrow, and even other clots cover and surround the extremities of the bone.

*Second day.*—In addition to the above-mentioned appearances, we now remark in the little depressions of the rugged surfaces of the fractured bone, certain red spots which appeared to us to be formed by a very slight effusion of blood. There is, besides, a ropy and slightly viscous matter, in very small quantity, which, being extended over the surfaces of the fracture, glues together the little pieces of bruised muscular substance, as we have before mentioned.

*Fourth to the sixth day.*—The viscous matter is more abundant. The surfaces of the fracture are covered, and particularly the depressions are nearly filled, with a red, pretty bright, softish, semi-transparent substance, somewhat downy to the touch, glued and adhering to the bone, and to the soft parts in the immediate vicinity of the fracture; and continuing itself, at least in appearance, with the marrow.

*Tenth to the fourteenth day.*—The reticular form of the substance interposed between the two surfaces of the fracture, and which in future we shall call *the substance intermediate to the fragments*, is generally better marked than on the sixth day, but sometimes less so. Generally, at this period, it has in a slight degree the appearance of a cavernous structure. It is more abundant, less red, more consistent, and more tenacious over the medullary canal, than elsewhere. It is more intimately connected with the marrow and the soft parts which lie immediately upon the fracture, than previously. It even forms with these latter parts, an induration, the structure of which is dense, homogeneous, and of a reddish-grey colour. In the midst of this induration, we occasionally observe a very irregular cavity, the parietes of which, partly formed by the fragments, present the appearance of fleshy granulations in a state of induration, and sometimes resemble columns, or short floating fringes.

The first changes which we perceived in the texture of the bony surfaces of the fracture, were not evident before the tenth day. They consisted in the disappearance of certain little points and sharp crests, which had become in a greater or less degree rounded. In pigeons the same phenomena are observed, with the difference of being more rapid in their progress.

When the broken portions of bone ride upon each other, we find at the point of contact, an intermediate substance similar to that which we have described in cases where the surfaces are applied to each other. This substance, which frequently even on the fourteenth day leaves some osseous points exposed, does not

closely adhere to the bone, except where it is of a deep red colour, and is only slightly attached in places where it is white.

*Sixteenth day.*—About this day the surfaces of the fracture are always completely covered by the intermediate substance, which continues to adhere more and more firmly to the substance of the bone.

SECOND STAGE.

This is the fibrous or fibro-cartilaginous state, and extends in dogs, from the sixteenth to the twenty-ninth day.

*The Tumour of the Callus.*—At this period the soft parts which immediately surround the fracture, having become swoln and indurated, contract more intimate adhesions with the intermediate substance. These parts, blended together at the site of the fracture, form a sort of knot or protuberance which we shall call the tumour of the callus, in which the fractured ends of the bone are confined, and as it were buried. This swelling or tumour is not at first distinctly limited, nor does it become so till the seventeenth or twentieth day, when the change, which we have described as going on in the cellular texture during the first stage, abates from without inwards, to be concentrated on the fracture, forming there the tumour of the callus, and insulating the fracture. After this, it is no longer confounded with the parts which cover it; the muscles, however, continue for some time, firmly adhering to it.

With regard to the structure of the callus, it is a solid mass, into the composition of which, independently of the osseous fragments, there enter two principal textures, distinguished by their colour and consistence. The one, exterior to the other, more or less white, and very firm, nearly resembles a fibrous or a fibro-cartilaginous texture, without presenting, however, any real fibres, but in which we readily distinguish parts purely cartilaginous. This texture, covering the fracture, and extending to a certain distance from it, generally exhibits at this period, in the parts most remote from the fracture, the hardness and other characters of bone.

The second principal texture, situated under the first, or towards the centre of the tumour, is red or approaching to a violet colour, according to the light in which it is viewed; it is soft and easily torn, spreading over the whole surface of each fragment, and so closely applied to the centre of each of these surfaces, that it is impossible to denude the bone completely at that place. We immediately perceive that this tissue is formed by the intermediate substance of the fragments, which continues to undergo a series of changes.

These two modifications of texture which we have described as composing the tumour of the callus, do not pass suddenly into each other. The transition occupies the thickness of from half a line to a line.

Where the broken portions ride over each other, the callus presents the same structure, with this slight difference, that the intermediate substance is less abundant, and that it has very often a middle character between the textures we have just described. Those parts of the fragments which had been denuded of the periosteum, begin after the sixteenth day to be every where covered with that intermediate substance; and if so late as the twenty-fifth day we detach it from the bone, this will still look like sound bone from which the periosteum had been removed. In sawing the broken portions in a longitudinal direction, the concussion of the saw readily detaches the intermediate substance, whereas this never happens when the broken surfaces are directly applied to each other. That part of the tumour of the callus which surrounds the fracture, is the firmer in its attachment the farther it is from the extremities of the fracture.

*Tendons and Muscles.*—Tendons passing through the fibrous substance of the callus, are sometimes lodged for a certain extent in a sort of canal which embraces them on every side, and in which they are capable of being moved. In other cases they are only lodged on the surface in a kind of groove.

We have never before the twentieth day found the muscles or their fasciæ passing directly over the fracture, separated from the callus by means of healthy cellular membrane.

*Periosteum.*—If during the second stage we examine the periosteum with attention, we find it very thick on the confines of the tumour, where it is very distinct and capable of being easily dissected from the parts which are in a cartilaginous or osseous state. Towards the middle of the tumour it becomes so blended with the substance and with the altered cellular tissue which covers the callus, that it is impossible to distinguish it, or discover the cicatrice at the place where it was torn when the fracture took place.

Of the singular facts regarding the periosteum which our experiments on pigeons enabled us to observe, we shall only mention, that on the tenth day after the fracture the periosteum could be separated from the cartilaginous or osseous substance of the callus, towards the extremities of the tumour, whilst there was no distinct periosteum or membrane in any respect analogous to it, on the middle of the tumour, or the part corresponding with the site of the fracture. Here the fibrous or fibro-cartila-

ginous substance, and the altered cellular texture were so blended, that they were lost in each other. It thus appears that the results obtained in the experiments on pigeons are exactly similar to those observed in dogs, only sooner produced.

*The Medulla and its Canal.*—The substance which we observed in the first stage to occupy the medullary canal near the fracture, gradually increases in quantity till the canal becomes entirely obliterated. After this period the canal does not begin to appear till within a certain distance from the fracture, whence it enlarges in its course towards the articular extremities, where it still preserves for some time its caliber, even though the cavity should ultimately be completely obliterated through its whole extent. Most commonly, however, and always indeed in small fractures, the obliteration of the medullary cavity stops in the vicinity of the fracture.

At the period we now speak of, the obliterating substance begins to acquire the character of bone, after having passed rapidly through the cartilaginous state. This osseous texture appears sometimes compact and sometimes a little cancellated, particularly towards the distal extremity of the fracture. Its colour is reddish, particularly where it is of a cellular structure.

In proportion as the medullary canal contracts and becomes obliterated, the volume of the medulla evidently diminishes, and it sometimes becomes a mere filament previous to disappearing entirely from the vicinity of the fracture. It at the same time acquires greater consistence, loses its redness, becoming whitish and sometimes yellow. We can frequently distinguish three different states of the medulla existing together at the same time, and passing more or less rapidly into each other. 1st. Near the fracture, the state which we have just described arising from a long continuance of inflammation. 2dly. Farther on, the redness of a new inflammation which has not yet produced any sensible induration. 3dly. Towards the articular extremities, the sound condition of the medulla.

*Cellular Texture.*—As the cellular tissue exterior to the tumour of the callus assumes a healthy condition (which we have seen does not take place before the 17th day), it appears to be devoid of fat, and becomes of a filamentous structure. The other membranes which accompany it at the same time cease to be confounded with each other. In pigeons, as the induration of the cellular tissue is concentrated round the fracture, it assumes an appearance approaching to that of cartilage. The cellular membrane of the muscles at this time partakes of the same condition, so as to appear confounded in the same mass.

### THIRD STAGE,

### Or the Period of Ossification.

*Callus, its Composition, &c.*—This period in dogs extends from the twenty-ninth day to the third month. It is characterised by the transition of the tumour of the callus into the state of bone. This ossification commences at the extremities, extends progressively towards the fracture, and finally pervades the whole tumour. Though we have here dated the epoch at which it begins to appear from the twenty-ninth day, we have seen it commence earlier. The period when the conversion of the tumour into bone is complete is very variable; but in general not before the third month. We have on one occasion found the tumour completely ossified on the forty-seventh day, but in other cases it has not been so at the expiration of five months and a half, or even six months and a half.

At the twenty-fifth day, almost the whole of the tumour of the callus is made up of the fibrous or fibro-cartilaginous substance, and the red substance which it encloses. At that period this last substance is of a firmer consistence, and acquires a brighter red colour. We once observed it separated from the broken partitions on the surface of the fracture, by a thin osseous or apparently osseous lamina, of a reddish colour, easily yielding to the scalpel, and quite distinct from the old bone. We also remarked on one occasion where the broken extremities of the bone had ridden over each other, that this red central substance which had been interposed between them, was separated by the concussion of the saw into two thin scales, each of which adhered to its adjacent fragment.

The fibrous or fibro-cartilaginous substance still continues for a long time in the largest proportion. It is implanted into the broken portions, and extends to a greater or less distance from the fracture, losing itself towards the boundary of the tumour in the new ossification which surrounds the parts like an irregular ring.

As the injury becomes older, the ossification advances progressively towards the fracture, spreading through the fibrous substance. This approaches more and more to the structure of cartilage, and extends towards the centre of the tumour, at the expense of the red intermediate substance, which becomes itself of a less bright red, diminishes in quantity, and acquires greater consistence.

This continual transformation of the red intermediate substance into fibro-cartilaginous matter, and of this again into

cartilage and bone, proceeds more or less rapidly according to the individual, and the peculiar circumstances of the case; and sometimes with various rapidity, though all the circumstances appear to be the same.

At length the tumour of the callus becomes almost entirely osseous. And now, if in order to examine its structure, we saw it and the broken parts at the same time in a longitudinal direction, we find at the place where its volume is most considerable, and at the point where the solution of continuity exists, that it is intersected by a line of a different colour from the rest of the callus, slightly waving, if the broken surfaces are accurately joined, and in a zigzag manner, if the union takes place by the overlapping of the fractured ends, thin towards the centre, and thick at the circumference, where it is lost in the periosteum. This line is yellowish, or inclined to white in certain points which have not yet acquired the osseous character. Every where else it is red.

When on the twenty-ninth day we forcibly remove the callus from the surfaces of the fracture, they appear in some degree tuberculated, and fretted like shagreen. It is scarcely ever possible to effect this separation after the second month. But when we do succeed, the surface always exhibits the same appearance, which may be compared to what is observed at the union of the epiphyses with the body of a bone.

*Cellular Texture.*—We have seen that in the second stage the cellular texture, after having undergone the changes which were described in the first, assumed its own proper characters, though it still continued dense and compact. This condition it retains for the first period of the third stage, particularly over the tumour. At length, at a period which varies, but may generally be fixed between the fiftieth and sixtieth day, provided that no splinter, fistula, necrosis, artificial joint, or suppuration exists, the cellular texture over the tumour becomes as sound as that of the rest of the limb; only that it is a little condensed, and still devoid of fat.

*Periosteum.*—All the periosteum covering the tumour of the callus continues thicker than in its natural state; not however to such a degree on the ossified parts as on those which are still cartilaginous. It is particularly thick on the middle of the tumor, while the intermediate substance is still as it were fibro-cartilaginous. However, as it gradually becomes confounded with this fibro-cartilage, its great thickness may only be apparent. We may compare this arrangement to that which is presented by the periosteum of the interverbral fibro-cartilages.

*Marrow and Medullary Canal.*—The phenomenon presented

in the disappearance of the marrow, and described under the second stage, as progressively proceeding from the fracture towards the articular extremities in proportion to the obliteration of the medullary canal by means of the new ossification, still continues during the early part of the third stage. At last this ossification either stops at a certain undeterminate distance from the fracture, or extends sometimes to the articular extremities.

Twenty-five days are sometimes sufficient to effect a complete obliteration, while at other times no other effect is produced in the course of eighty days than the abolition of that part of the canal contiguous to the fracture. These varieties are even observed in the two extremities of equal length of a single fracture, as well as in two fractures occurring in two different individuals.

When the cavity is obliterated, no farther trace of the numerous vessels of the marrow is to be found.

### FOURTH STAGE,

### From the Third to the Six Month, in Dogs.

*Callus.*—This stage is characterized by the ossification of the whole tumour of the callus, and by the perfect immobility of the fractured extremities which is the natural result of such a state of parts. We can sometimes indeed discern a few cartilaginous points beneath the periosteum opposite the fracture, but these quickly ossify. On sawing through the callus in the longitudinal direction of the bone, the transversal line described under the third stage is distinguished by a deeper and redder colour than characterizes the rest of the new ossification, in the tint of which it gradually blends itself as the cellulous cavities are developed. This line is still to be distinguished externally for a considerable time by a deeper colour, and a firmer adherence to the periosteum, than the rest of the tumour, and sometimes even by a slight depression.

*Change of Form in the Extremities of the Fracture.*—Although the extremities of the fracture hardly seem susceptible of any change in form, except what arises from the new ossifications, we think that we have seen them twice in our experiments upon dogs assume a conical shape, so as to lead to the belief of contraction in the medullary cavity. We must, however, observe, that we never have remarked this circumstance before the ninetieth day; and in the two cases referred to, the bone fractured was the thickest in the body, namely, the tibia.

In pigeons, this phenomenon is often very apparent in the

humerus, which in these animals is very thick, and has an ample cavity. It occurs likewise at an earlier period, for on the forty-ninth day after the fracture, we have observed the cylinder of this bone flattened and contracted in each of the consolidated fragments.

### FIFTH AND LAST STAGE OF THE CALLUS.

This period is characterized by the diminution of the tumor of the callus, and the restoration of the medullary cavity. Like all other phenomena connected with the callus, it begins sooner or later, and varies in its duration, according to the age of the subject, the kind of bone, the place of the fracture, &c. At whatever period it begins, it distinctly shews itself only when the complete ossification of the callus is of long standing. This diminution of the callus, like ossification of its substance, appears sooner in the medullary canal than in the tumour; for the almost total or even complete disappearance of the new osseous substance which had formed in the medullary cavity, and the restoration of that cavity to its full extent, are circumstances which occur a long time before any sensible diminution in the tumor of the callus.

*Medullary Cavity and Organ.*—In the preceding stages, we have seen the obliteration of the medullary canal, which takes place in the vicinity of the fracture, and the confinement of the marrow to that portion of the cavity which remains. As soon as the substance which causes this obliteration has attained to the state of bone, cells begin to form in it. These cells are at first very small; they subsequently enlarge and unite; the partitions dividing them become thinner and thinner every day, and at length are converted into a bony net-work, which soon disappears; and thus no trace of the ossification of the medullary canal remains.

As soon as the above mentioned cells are visible, their parietes are of a vivid red colour, which soon becomes that of the whole mass; they also contain a reddish sort of galatinous fluid. As the cells enlarge, and the medullary canal begins to assume a distinct form, both the parietes and the fluid become less red. When the canal is formed anew, instead of the medullary juice described above, we observe marrow which is of new formation. This is recognisable by its consistence, colour, oily nature, a medullary membrane, or at least the appearance of one, and by numerous and considerable vessels distributed similarly to those which existed before the fracture. A sort of medullary juice similar to the fluid of which we have just spoken

appears also in the other ossified portions of the callus as soon as they become cellulous.

Such are the phenomena presented by the medullary cavity and organ after a fracture. They may be reduced to the partial or entire obliteration of this cavity and the medulla, and to their reproduction. The time necessary for their complete redevelopement varies much, is very different in two fractures in the same individual, and frequently even in the two extremities of the same fracture, without our being able to assign any reason for these varieties. Our observations upon dogs prove, that the disappearance of the medulla in the vicinity of the fracture is sometimes as far advanced at the sixteenth as at the sixty-sixth day, and that the canal and the medullary organ may sometimes be completely re-established before the fifth month, and at other times not even at the end of seven months and a half. Similar variations have occurred in our experiments upon pigeons; except only that in these animals, the different phenomena succeed each other more rapidly than in dogs.

Among the results of our experiments upon pigeons, there are two which deserve to be particularly noticed. It is well known that there is no medulla in the humerus of these animals. That bone contains air, and it is from analogy only that we admit a lining membrane to its cavity. From the seventeenth to the eightieth day after the fracture, numerous vessels of considerable size, and injected with red blood, rendered the membrane of the humeral cavity extremely evident.

The other result is extremely surprising. We have only seen once, and that seventeen days after the fracture, a substance perfectly analagous to the medulla in one of the extremities of the fractured humerus. Is it possible that in certain circumstances a real medulla may be formed in those bones of birds, in which it does not exist in a state of health?

*Tumour of the Callus.*—In proportion as the osseous points which we have seen in the third stage, unite to form the centres of ossification in the tumour of the callus, the cells are developed. These are perfectly similar to those previously seen in the osseous substance which obliterates the medullary canal. In proportion as they enlarge, and become less numerous, there forms on the external surface of the callus a compact osseous lamina, which appears to augment in thickness with the gradual diminution of the tumour. At length, when the callus disappears altogether, or almost altogether, as it does when the extremities of the fracture are placed in exact apposition, this compact lamina becomes as thick as the rest of the osseous parietes of the medullary canal.

*Periosteum.*—The periosteum, which was so thick over the portions of callus yet cartilaginous, or only recently ossified, becomes every day thinner; though, for a very long time, it continues to present a greater degree of thickness over the middle of the tumour than elsewhere. It preserves also, for a long time, a very firm adherence to the callus, and when we detach it, we see a multitude of filaments which are continued from the periosteum into the osseous substance. It is, usually, from the forty-fifth day, that the periosteum evidently becomes thinner towards the extremities of the callus. This diminution in the thickness of the periosteum goes on so slowly, that not unfrequently at the seventh month this membrane is still considerably thicker over the extremities of the tumour than it is at a little distance from the fracture. It is not, then, till a period more or less considerable has elapsed after the entire ossification of the callus, that the periosteum assumes completely its natural appearance. In pigeons, at the fifty-fifth day, the periosteum covering the callus, appeared thin and in other respects natural.

*Callus before the Re-establishment of the Medullary Cavity.*—We have seen, that before the callus is completely ossified, the extremities of the fracture are enveloped externally by the new ossification, that internally the corresponding portion of the medullary canal is filled by another ossification, and that, latterly, the one and the other are united by an intermediate substance which is equally ossified.

It sometimes happens, when the medullary canal has been for some time obliterated by the new ossification, that the intermediate substance is ossified only in the part corresponding with the canal, while the rest of this substance which lies between the osseous surfaces is still in the cartilaginous state. Thus, the internal ossification forms a kind of peg, inserted into each end of the fracture.

At length, when the ossification of the callus is complete, the two extremities are also united externally by the kind of ring or cylindrical splint which Duhamel has described with so much care, and in their interstice, by the intermediate substance.

To give a just idea of the whole mass of callus, it may be compared to a short fusiform tube, transversely divided by a partition, from each side of which rises a plug; so that the fracture is consolidated on the outside of the extremities, on their inside, and in their interstice.

*Form of the Tumour of the Callus.*—As we have already said, it is not till the sixth day after the fracture that we find the

callus in dogs forming any considerable tumour. The size of this tumor increases progressively during some days, and its form changes. Nearly round at first, it is soon elongated by the developement of a substance between the bone and the periosteum. As soon as this substance has acquired the characters of bone over the edge of the fracture, the tumor ceases to be elongated, begins to be exactly limited, and is generally fusiform, because the callus, always very abundant opposite to the fracture, gradually diminishes in thickness towards the articular extremities of the bone. The callus is regularly fusiform, if the fractured extremities are exactly in apposition; and irregularly so, if they ride over each other, or if a tendon or any other substance has opposed their accurate apposition.

When the extremites ride, the callus does not surround them in a regular manner; it prolongates itself very far upon the side of the extremity which is ridden upon by the other, and is very thick there, while it is less extensive and thinner on the other side. Hence, it arises, that the callus is thicker upon one side, and thinner upon the other side of the same extremity. It is this difference which establishes a kind of symmetry, and renders the callus uniform; but in this case it is always much more protuberant in the middle than when the surface of the extremities are exactly opposed to each other.

*Vessels of the Callus.*—It is stated by all the authors who treat of this subject, that the callus is organized by the vessels which traverse it, and which establish a communication between the one extremity and the other, but it is only from analogy that the greater part of these authors have made this assertion. Dethlecfries affirms that he saw them distinctly in a callus which had acquired the hardness and whiteness of cartilage, in a cat the arteries of which he had filled with wax.* Bonn relates, upon the authority of Reimarius, that Hunter had demonstrated very numerous vessels in callus which had not yet arrived at its perfect state.† Are these the same vessels which Bertrandi, professor of anatomy at Turin, told Bordenave that he had seen in some anatomical preparations in London?‡ Mr. Howship has lately made us acquainted with the vessels of the callus, which he has injected in great number from the fifth day after the fracture to the thirty-second.||

We do not remember any others who have actually seen the

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* Dissert. de Callo, p. 39. † Descript. Thesauri Oss. Morb. Hoviana.

‡ Mem. sur les Os, &c. par Fougeroux, p. 239.

|| Medico-Chirurgical Transactions, Vol. ix. Part I:

vessels in the substance of the callus; yet it would be a difficult task to enumerate, much less to name all those who contend for their existence. If we take into consideration the series of changes which the callus undergoes, we acknowledge that it is difficult to deny the existence of these vessels: yet it is a matter of some little importance to be able to demonstrate and show them at every period in the formation of callus. We have in our possession, preparations which clearly do this.

In a more extended work on the subject of callus which we intend to publish, accompanied with plates, we shall show that these vessels arise from those of the medullary canal and organ, although the extremity of this canal is or has been obliterated by an osseous substance. The largest of these vessels are tortuous and much divided; their general direction is from one fractured extremity to the other.

*Tenacity of the Callus.*—We are acquainted with very few observations on the tenacity of healthy bones; this physical property which they possess is nevertheless deserving of attention. In respect to bones in which the callus is more or less recent, all observations agree in establishing in a general way, that, cæteris paribus, the union of the fractured extremities is the stronger in proportion to the length of time which has elapsed from the fracture of the bone. We say cæteris paribus, because the force of tenacity varies in different ages, in different individuals, and is swayed by the general state of health. There is one assertion only which we can make on this subject; namely, that the commencing tenacity of the callus often ceases to increase, and even diminishes under the influence of acute disease. This observation we have made in some dogs who were subjected to experiment. Troja* is the only one, we believe, who has made direct experiments to determine the force of tenacity successively acquired by the callus. These experiments were made on little dogs of the same age, in which he fractured the tibiae in order to examine the relation of the acquired tenacity of the callus to the natural tenacity of the bone, at different stages of the fracture. He found, at the end of four days after the fracture, that the tenacity of the first was to the tenacity of the second as 1 to 34; at the expiration of ten days, nearly as 1 to 7; at the termination of twelve days, as 1 to 4; at the end of sixteen days, as 1 to 3.

This is all that we have yet observed on the tenacity of the callus. Without repeating what we have already remarked

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* De Novor. ossium regeneratione Exper. xix. Encyclop. de Diderot et d'Alembert, art. Tenacité des Os. Suppl.

twenty-four hours after the fracture, we only wish to recall to the recollection of our readers, that on the sixteenth day the violence or shock given to the fractured extremities by sawing the tibia longitudinally, partly tore the fibro-cartilaginous substance of the callus from a fractured extremity of the fibula which remained denuded; and that on the sixty-sixth day the intermediate substance of the fractured extremities, still red and softish upon the surfaces of the fracture, was torn by similar shocks, but without denuding the osseous substance. Some experiments which we made, confirm the general opinion of surgeons on the tenacity of the callus. Every time that we attempted to break a bone, the callus of which was not quite ossified (supposing that the union had taken place by the surfaces of the fracture), the new fracture always took place at the exact spot where the first had occurred, while it is well known that at a later period, the bone is more readily broken at any other part. This greater degree of resistance in a callus which is not of recent formation, appeared to us to diminish and even disappear entirely in very old callus, which is little or not at all visible. As to bones which ride, the tenacity of the callus has always appeared to us to be in proportion to the length of the riding of the bone, without, however, forming any exception to the rules which we have already explained.

In a second Memoir we shall give an account of the callus in compound fractures.

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## Art. VII. *Sketches of the Medical School of Vienna.*

(CONCLUDED FROM PAGE 53.)

"Id quidem infinitum est in hac Urbe."
Cicero, de Finibus, *Lib. V.*

### THE SURGICAL CLINIC.

The chair of this clinic is filled by Professor Vincenz Kern, who gives daily lectures upon the Practice of Surgery, in the operation-room adjoining to the wards. This clinic, indeed, owes its origin to Professor Kern, and has existed only since 1806. The number of male patients admitted is eight, and of females six. They are usually chosen from among the

patients of the hospital who are admitted gratuitously; but when important operations are about to be undergone, it frequently happens that patients who pay, prefer passing into this clinic.

The clinic is public to every one who leaves his name with the Professor. The students of surgery of the second year are obliged to attend, and to undertake the care of patients, as the students of medicine do in the clinic for internal diseases. From sixty to eighty students follow the clinical visit, but the operations are much more numerously attended. The visit is at ten o'clock every morning.

With this clinic is connected a particular institution, or *Pflanzschule*, as it is styled, for the education of surgical operators. Professor Kern has the liberty of selecting six individuals from among his pupils. These he instructs privately for two years, exercising them especially in the various operations of surgery upon the dead subject; after which they are permitted publicly to operate upon the living. Professor Kern, indeed, leaves almost all the operations upon the clinical patients, except lithotomy, to be performed by his pupils, while he himself takes his place as their assistant. The pupils who are selected for this purpose are not in every case students of surgery, but are sometimes graduates in medicine, whose peculiar talents and inclination lead them to the practice of surgery. They live in the hospital, and receive from the Emperor a yearly stipend, in consideration of which they are afterwards obliged to serve the state for a certain period. In general they are speedily promoted to be surgeons of hospitals, regimental surgeons, or professors of surgery in some of the Lyceums.

An extremely useful society exists, among the students who frequent the surgical clinic, for the promotion of professional information. They already possess a well-selected library, to the use of which foreigners can be admitted; and the various medical and surgical journals of Germany are regularly circulated among the members.

Professor Kern is distinguished by his extreme attachment to simplicity in his surgical instruments, and methods of operating. His lithotome is a short and thick knife, of a very simple and almost uncouth form. The simplicity of his external treatment of surgical diseases is still more remarkable. His school may well be called the School of Nature; for he trusts almost as little to art as did *Maistre* Doublet, the contemporary of Ambrose Paré, of whom Brantôme tells us— "Et toutes ses cures faisoit le dit Doublet par du simple linge blanc et belle eau simple, venant de la fontaine ou du puits."

Professor Kern has banished from his practice almost all the common applications, such as ointments, plasters, lotions, charpie, and even bandages; and has substituted in their place the application of water, and a simple covering of linen. This plan of treatment he follows even with his private patients; and it certainly shews no small firmness, to humour the prejudices of the public so little, as never to prescribe a plaster or a salve.

In amputation, Professor Kern makes use of iced water, which he applies by means of a sponge to the surface of the stump, as soon as the large vessels are tied. This application, so far from being painful, appears to give relief. The edges are then brought together by adhesive straps. The stump is covered with a large flat sponge, dipped in cold water, and wrung between the fingers; and this is continued for forty-eight hours. In some cases, this application is changed for a folded piece of linen moistened with warm water, and applied over the adhesive straps. The same mode of treatment is followed with all wounds after operation. The edges are brought together by adhesive straps, and then water is applied. No ointment, no charpie, no bandage is employed. The success of Professor Kern in his operations is very great.

The extreme simplicity of Professor Kern's practice is a subject which never fails to excite the attention of those strangers who visit his clinic. The cases under treatment are seen to be going on well; and the success was acknowledged by all with whom we conversed, to be extraordinary. Yet the use of water, as almost the only external remedy, is a practice which by no means meets with a favourable reception. We found few even of Professor Kern's pupils, who advocated this practice; many seemed to think it unworthy of serious examination, and to feel as if such a simplification of surgery were a degradation of the art; others blamed the practice with much asperity, yet without daring to deny the success with which they saw it attended.

Those who address Professor Kern upon the subject, he refers to the patients before them; or, if he enter into any defence of his opinions and practice, it is nearly in the following manner:—

"At the commencement of my surgical practice, I had a patient brought to me with a large ulcer on the leg, which had resisted all kinds of ointments and plasters. I told the man to lie in bed, to remain at rest, and to give up all applications, except a poultice. In three weeks the ulcer was closed. This, and many similar facts, have convinced me of the bad effects

of the usual treatment, and led me to the use of a more simple plan of cure. I employ water as an indifferent matter, to cover a surface which is deprived of its natural isolator, the external skin, and to protect that surface from injurious influences. The warmth acts favourably upon the circumference of the sore, as well as upon the sore itself. Ointments and plasters, on the other hand, are irritating and prejudicial substances, when brought into contact with an uncovered surface, naturally unaccustomed to any such foreign impression.

"Even as wounds of bones, for instance fractures, are healed without any external application, so may all wounds of the soft parts be cured. The cure of wounds is the work of nature. Even gangrenous, venereal, and scrofulous ulcers require only a proper internal treatment, and the use of external warmth applied by means of water. Cold, again, applied by means of a sponge to recent wounds, lessens in the most effectual manner the organic reaction, diminishes pain, moderates suppuration, and prevents nervous affections. Bandages may be dispensed with, except in a very few instances. The journals of this clinic are open to your inspection."

A farther account of Professor Kern's opinions may be found in his "Annalen der chirurgischen Klinik," 2 vols. 1809: and in his treatise "Ueber die Absetzung der Glieder. Wien, 1814."

### THE OPHTHALMOLOGICAL CLINIC.

It is necessary accurately to distinguish those practitioners who have of late years applied themselves in Germany to the diseases of the eye, from the class who are termed oculists, whether of that or of any other country. The latter would wish to divide surgery into a number of trades, of which they would monopolize one. The former have not confined themselves to the eye, but all of them have come prepared to the study of that organ by an intimate acquaintance with medical science in general, and many of them have distinguished themselves by their labours in anatomy, and their improvements in the practice of surgery; as for instance, Richter, Schmidt, Barth, and Prochaska. These men have not regarded eye-diseases as local merely. They have rendered eye-operations less frequent, by their rational and constitutional treatment of those affections which give rise, under mere local and empirical management, to the morbid changes of the eye which afterwards call for the interference of the operator.

Vienna is at present the most celebrated school for the surgery of the eye, in Germany. Professor Barth, who is by birth

a Maltese, and still lives in Vienna, as emeritus-professor of anatomy, was the first public teacher in this branch of surgery in Austria. He is but little known by his writings on this subject, not having published any thing upon the diseases of the eye, with which we are acquainted, excepting a small tract, in which he describes a manner of performing extraction of the cataract without an assistant. He has many pupils, however, who still speak of his lessons with respect; and the present professor of Practical Ophthalmology was, for a considerable number of years, his assistant. By the late Johann Adam Schmidt, the fame of Vienna as a school for the diseases of the eye, was much increased. He did not belong to the general hospital nor to the university, but to the Josephine academy. He is well known by his ophthalmological as well as by his other writings, and especially by his treatises upon the diseases of the Lachrymal Organs, and upon the inflammation of the Iris. He wrote a considerable part of the ophthalmological "Bibliothek" of Himly; and it were to be wished that some of his countrymen would treat his memory with somewhat more respect, and acknowledge what they have borrowed from his valuable communications to that journal.*

Dr. George Joseph Beer has been for more than thirty years employed in the practice of this department of surgery. He was for many years extraordinary professor only, but in the year 1815 a chair of Practical Ophthalmology was founded in the university, which has since been filled by this learned and enthusiastic man. The name of Professor Beer is already known in England. He is a voluminous author, but all his works are upon the subject of his favourite study.

The clinic for the diseases of the eye has undergone various improvements within the last ten years. It has existed in its present situation in the general hospital, and with its present arrangements, since November 1816. This clinic consists of an auditorium, and of two wards, on the second floor of the hospital. The auditorium is well lighted, and neatly coloured in green. The windows are so supplied with shutters and curtains, that the light can be in an instant increased or diminished. A large eastern window supplies the light admitted during operations. Besides seats for 150 students, this room contains a cathedra of an oval form, raised about a foot and a half from the floor, and surrounded by an iron balustrade.

* Soemmerring, in his work upon the Diseases of the Bladder, speaks of Professor Schmidt's "Commentarius de Nervis Lumbalibus Anatomico-pathologicus," in terms of the highest praise. That work was published in Vienna, at 1794.

From this the lectures are delivered, and it is used also for the operations, being large enough to contain a patient, along with the professor, the assistant, and the *ordinarius*, or pupil to whose care the patient is intrusted. A collection of instruments and bandages, both for the use of the clinic, and for the illustration of the history of ophthalmology; a collection of anatomical and pathological preparations of the eye; and a library of printed books, manuscripts, and drawings, illustrative of the structure and diseases of that organ; are contained in the auditorium. The dust of neglect is not allowed to gather on any of these collections. They are on the contrary yearly increasing. The library is open to the students. The auditorium is adorned by a bust of the present Emperor, on the pedestal of which is the following inscription.

FRANCISCI. PRIMI. AUGUSTI.
PATRIS. PATRIÆ.
INSTITUTI. HUIUS. OPHTHALMOLOGICI.
FUNDATORIS.
PIÆ. AC. GRATÆ.
ET. MEDICORUM. ET. ÆGROTORUM.
VENERATIONI.
SOLEMNITER. POSITUM.
MDCCCXVI.

Portraits also are hung up in the auditorium of Baron Protomedicus Von Stift, the Director of Medical Study in the Austrian dominions; and of the following distinguished surgeons—Scarpa, Richter, Schmidt, Barth, and Prochaska.

Each ward is about the same size as the auditorium, is also coloured green, and contains twelve beds. The wards are separated from the auditorium by two small rooms appropriated to the use of the nurses. In the middle of each ward is a long table, upon which is placed a small crucifix, and which serves both as a dining table for the patients, and also for laying out the bandages, instruments, and medicines, made use of at the visit. The windows are supplied with shutters and curtains. Each bed has three such substitutes for curtains as we have already described at page 45. The wards are furnished with every thing necessary both for the strictness of clinical instruction, and for the peculiar care of patients affected with diseases of the eye. A salaried assistant, residing in the hospital, is also attached to this clinic.

The instructions delivered in this institution, which, as in the other clinics, are continued uninterruptedly for ten months, are given in the following order. The lectures on Practical Oph-

thalmology are delivered every morning, Saturdays and Sundays excepted, from ten to eleven o'clock, in the German language. The lectures commence with a very complete account of the anatomy and physiology of the eye, in which constant reference is made to the morbid changes to which the various textures of that organ are liable. The dissections of the eye and of the neighbouring parts, which are made for this part of the course, are very numerous, and are executed with great care, chiefly by Professor Beer himself. Students can readily procure admission when these dissections are preparing, and thus have an opportunity of becoming more intimately acquainted with the practical anatomy of the eye, and with some peculiarities in Professor Beer's manner of demonstrating that organ. Under the anatomy of the eye, Professor Beer includes the osteology of the orbit, and the demonstration of the muscles, blood-vessels, nerves, and all other parts connected with the organ of vision. He borrows frequent illustrations from the comparative anatomy of the eye; and possesses a finer collection of original drawings in this particular department than is perhaps in the hands of any other anatomist. To this part of the course, which lasts about two months, follow a few lectures upon the manner in which the diseased eye ought to be examined. The next and principal part of the course continues for nearly six months, and is occupied with the pathology of the eye, and the medical and surgical treatment of its diseases. The whole concludes with a history of ophthalmology from the most ancient times to the present, and a critical review of the most celebrated works in this science.

Daily, from eleven to twelve, Saturdays and Sundays included, the strictly practical instructions are given, partly at the bed-sides of the patients who have been admitted into the clinic, and partly in the review of the ambulatory or out-patients. The plan followed by Professor Beer is to bring every new and interesting patient, whether he be afterwards to remain in the clinic, or to be an out-patient only, into the auditorium, and to place him in the cathedra. Any one of the students may now offer himself to be the *ordinarius* or *candidatus assistens* for this patient, and entering the cathedra, may examine the symptoms, pronounce a diagnosis and prognosis, and propose a plan of treatment. All this is done under the correction of Professor Beer, whose earnest desire to communicate instruction in these practical exercises merits the most unequivocal applause. It is here perhaps that Professor Beer most distinguishes himself. We do not mean to lessen his fame as an eye-operator, already so widely and so well established, but we

must confess that it was ever as a diagnostician that he appeared to us to rise beyond all rivalship. It is not merely the patients upon whom operations are about to be performed, or whose cure is in any other way to be attempted, who are thus publicly examined. We account as one of the most profitable parts of our studies at Vienna, the examinations of many diseases of the eye which were wholly incurable. It is by thus studying the morbid anatomy of the eye upon the living subject, that one becomes able to distinguish the cases which are proper for operation, from those in which manual interference can never be serviceable, and is often injurious.

The semestral examinations of Professor Beer consist in this kind of practical exercises, and for this purpose the most important cases are selected from the clinic and from among the out-patients. These examinations, the general nature of which we have explained at page 38, thus become a means of discovering the real and practical knowledge of the candidates, and are useful and interesting even to the hearers. They are very unlike most academical exercises, which are seldom more than wearisome proofs of the strength or weakness of a candidate's memory, and but very insufficient tests of ability and information. These exercises are conducted at the desire of the student in German or in Latin.

The strictly clinical part is conducted with the same exactitude as in the clinic for internal diseases. The cases are written with equal minuteness, and upon the same plan, except that Professor Beer places the prognosis before the treatment. They are composed in German or in Latin, and some of them in the latter language, which were read during our attendance on the clinic, justly merited the eulogium of being written, as far as the nature of the subject would permit, in a Ciceronian style.

The number of students who attended this clinic for the last three years was as follows:—

| | | |
|---|---|---|
| 1814-15, | 111. | Of these 65 were not Austrians. |
| 1815-16, | 170. | ........ 92 .................... |
| 1816-17, | 199. | ........ 104 .................... |

The number of patients and of operations during the same period was as follows:—

| | In-Patients. | Out-Patients. | Patients operated upon. | Patients operated upon for cataract. |
|---|---|---|---|---|
| 1814-15,.... | 96 | 114 | 92 | 60 |
| 1815-16,.... | 106 | 158 | 78 | 57 |
| 1816-17,.... | 115 | 180 | 96 | 59 |

From these numbers some idea may be formed of the oppor-

tunities afforded in this clinic, of studying the diseases of the eye, and of witnessing the operations which are performed upon that organ. We need scarcely say, that the number of inflammatory diseases of the eye is very considerable. There are indeed several causes which render eye-diseases extremely common in Vienna. We refer particularly to the excessive quantity of dust with which the streets, and above all those of the suburbs, are covered; and to the use of new wine of very inferior quality by the common people. The former is a fruitful cause of different kinds of ophthalmia; and to the latter must in a great measure be attributed the frequency of cataract and of amaurosis, as well as of gout. The last mentioned is one of the most common diseases occurring in the hospitals of Vienna, and it is found to extend itself under various forms to the eye.

If the diseases of those who present themselves as out-patients are of such a nature as to be aggravated or protracted by their coming and returning daily, they are immediately admitted either into the clinic or into the general hospital.

We have already taken notice, at page 38, of the method of instruction by what are called *privatissma.* Those of Professor Beer are extremely valuable. He gives a short course of the operative surgery of the eye, repeats the different operations, and explains as he goes along, every step and minutia in their performance, and then directs the pupil in the repetition of each of them upon the dead subject. After attending one of these private courses, the pupil is allowed to operate upon the living subject. Upwards of thirty heads are employed in a course.

Daily, at three o'clock in the afternoon, Professor Beer gives advice to the poor in his own house, and to this house-clinic, as it is called, students are admitted. Many of the less severe diseases of the eye may here be observed, which are not so frequently seen at the hospital; and the student finds in Professor Beer a friend ever ready to explain, and to assist him in the examination of the cases.

The fee for the clinic is twenty-five paper guldens yearly, for the house-clinic a ducat, for a *privatissmum* eighty paper guldens, and for each operation upon the living subject four ducats. For Dr. Rosas's *privatissmum,* twenty-five paper guldens. For each head for operations, one paper gulden.*

We have forborne entering upon the consideration of Professor Beer's opinions and practice, as these will come before

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* A paper gulden is equal to nine-pence—a ducat equal to half-a-guinea.

us in a review of the work which he has lately published, under the title of "Leitfaden."

## THE LYING-IN HOSPITAL.

The *Gebaerhaus* or Lying-in Hospital was established by the Emperor Joseph II. in the year 1784, partly with the view of preventing child-murder. In the course of the first year after it was opened, 748 children were born in this hospital. It forms part of the *Allgemeine Krankenhaus*, and is under the same management; but is separated in some measure from the other buildings of the hospital by a small court. Besides the entrance by the great gate of the general hospital, there is a private door which is used by those who would go in unobserved.

This establishment is divided into two sections. The one is for those women who pay; to the other admission is gratuitous. The former is committed to the superintendance of Dr. Pelan, and is not open to students. The latter constitutes the Clinical School of Midwifery, and is under the care of Professor Boër.

## THE PRIVATE LYING-IN HOSPITAL.

The private Lying-in Hospital consists of two divisions. The one contains twelve rooms on the ground floor, which are set apart for secret deliveries, and the greater number of which are occupied each by a single patient. The other division contains six rooms, each of from four to six beds. In the first division, if the room is not occupied for a complete day, six paper guldens are paid. If the person continues longer, she pays daily a gulden and a half; for which she has board, lodging, medical attendance, nursing, and the baptism of her child. If she gives over her child to the foundling-house, she pays forty guldens. Besides the accoucheur, midwife, and nurse, no person is allowed to enter her room. In the second division, there are indeed several beds in each apartment, yet there is such an arrangement, that those who have been, are separated from those who are to be delivered. A person who does not remain in this division during an entire day, pays four guldens and a half. If she remains longer, she pays daily half a gulden. Also here, none but the necessary attendants are admitted. If a woman of this division would give her child into the foundling-house, she pays twenty guldens.

This section of the lying-in hospital was intended by the imperial patriot as an asylum for those who might wish to conceal their pregnancy; and here those individuals find that they are safe from discovery. Even the tribunals are obliged, if it be brought as a corroborative ground of accusation against a

woman that she had resided in the lying-in hospital, to reject the evidence to that effect as not valid. On entering the hospital, the woman is not required to tell her real name or condition, much less to declare who is the father of her child. She is required merely to bring along with her a sealed letter containing her real name, that in case of her death information may be communicated to her relations. As soon as the num ber of her room and bed is written upon the letter, it is returned into her own keeping. She can enter the hospital and leave it in disguise, or even masked; and indeed continue so during her whole residence, if she choose it. If she bring a nurse along with her, she need not expose herself even to the nurses of the hospital. She can leave the hospital immediately after her child is born, or remain for some time. She can leave her child, or remove it. Many make use of this institution only during labour, leave it some hours after their delivery, and give up their child to the foundling-house.

The rooms of this section are neither so spacious nor so clean as those belonging to the section for the poor, but are more crowded. Notwithstanding, they contain fewer sick in proportion to the number they accommodate, and fewer die in this section. This must be attributed in some measure to the greater degree of warmth, and to the avoidance of draughts of air in small rooms, in which particulars these are much preferable to spacious and airy wards, especially for lying-in women.

The average number of births in this section of the lying-in hospital, has been for some years past from 800 to 1000 annually, being about a third fewer than in the clinical school. From 1st January to 23d December 1814, there were 875 births, 700 of which took place in the first division. In the year 1816, the number of births was 895. We suspect that in a considerable proportion of these births, the children are legitimate. In the twenty-four hours, there are on an average from two to three births. Three midwives assist at the labours, and the accoucheur is called in only in difficult cases. Very few operations take place in this section.

## THE OBSTETRICAL CLINIC.

The chair of Clinical Midwifery is filled by Professor Lucas Johann Boër. The section of the lying-in hospital, containing all those women who are admitted gratuitously, along with almost all those who enter on the lowest rate of twopence halfpenny daily, is committed to his care. Every woman admitted gratuitously must assist in the household-work of the hospital, and after-

wards serve for a certain time as nurse in the foundling-hospital. The number of births in this section is 1200 annually. The proportion of unmarried women delivered, is to that of the whole number delivered, as 47 to 50.

This section of the lying-in hospital is frequently styled the *Schola Obstetricia;* and it is here alone that students are admitted to the practical study of midwifery. Indeed it is chiefly in this school that midwifery is at all studied, at least by foreigners, at Vienna; for Professor Boër's lectures in the university are for midwives rather than male students, and the lectures of Professor Schmitt in the Josephine academy interfere with the clinical visit of Professor Boër.

Professor Boër visits his clinic morning and evening. The morning visit is from nine to ten, and is so far public that foreign students, who apply to Professor Boër, are permitted to attend gratis, and to be present at the deliveries which happen between these hours. Those who follow this visit meet in the delivery-ward, and then attend the Professor through the wards containing the women who have been delivered. Two wards for this class of patients are constantly in use, each of fourteen beds. A third was formerly kept for the purpose of emptying either of the others at pleasure; but when we were at Vienna, all the three were occupied.

Into one of these wards, those who are about to be delivered are brought as soon as their labour-pains commence, and there they remain until the os uteri has dilated. They then pass into the delivery-ward, which is situated between the two large wards for women who have been delivered. The floors of all these apartments are covered along the sides of the beds with broad pieces of dark-coloured cloth, which are continued also between the wards. This prevents those who have been delivered from stepping out of bed upon a cold floor, and hides any blood which may fall from the woman in labour, as she passes into the delivery-ward.

The delivery-ward contains four beds, which are surrounded by the kind of moveable curtains formerly described. No delivery-chair is employed by Professor Boër, but the bed is arranged to answer the purpose of a delivery-chair, by means of ten bags of straw, each three feet long, and from a foot to a foot and a half thick. These are laid above the straw-mattress of the bed, and serve to raise the head and back of the patient. Over all are laid a woollen coverlet and a sheet, and a coverlet of the same kind is laid over the woman.

From considering the manner in which the child passes in natural labour into the pelvis, Professor Boër is led to insist

particularly upon the woman's laying herself upon her left side during the first stages of delivery. As the head approaches to the inferior opening of the pelvis, she is directed by Professor Boër to place herself upon her back, and to keep her knees moderately bent. When the labour does not promise to be very easy, there is stuck into an opening on each side of the bedstead a curved piece of strong wood, which the patient lays firm hold of with her hands, in order to be able to employ greater force in contracting the expulsive muscles. These pieces of wood are removed as soon as delivery has been accomplished. It is evident, we think, that they are disadvantageously placed, and that if any such point of support is to be used, it ought to be situated before and not laterally. The midwife or pupil, who assists, stands or sits upon the right side of the patient, and with the right hand covered with a smeared handkerchief, the points of the fingers being directed over the anus, supports the perineum. Soon after delivery, the straw cushions are gradually withdrawn from under the patient, so that she is brought to the horizontal position. She continues in the same bed for three hours, during which time she is attended by one of the female pupils, who, lest hæmorrhagy should come on unobserved, is ordered not to allow the patient to fall asleep. After the expiration of the three hours, the woman walks slowly into one of the wards for those who have been delivered. Her child is given to her very soon after she is laid in bed. Professor Boër insists upon this, in consequence of some peculiar ideas which he entertains respecting the origin of the diseases of new-born children.

The assistant and the midwife live in the hospital, and are present at all deliveries. The professor does not live in the hospital, and is called only in difficult cases. There are ten male students, and as many female pupils, to whose care the patients are particularly intrusted, before and after delivery, as well as during the time of labour. Six of these students are styled *Intra-Pratikants*, and the remaining four *Extra-Pratikants*. All the ten female pupils are *Intra-Pratikants*, and reside in the *Gebaerhaus* itself. The six students who are *Intra-Pratikants* reside in other parts of the hospital. The four *Extra-Pratikants* are not Austrians. The appointment of *Pratikant* is given by the Professor, and no money is taken for it openly. The *Pratikants* are the only persons called upon to be present at operations. A male and female *Intra-Pratikant* daily take the office of journalists, whose duty it is to examine all women applying for admission, to be present at all deliveries which take place within the course of the twenty-four hours,

and to enter into a book the names of the patients who are admitted into the clinic, and of those who are delivered during that day, but without any history of the cases. The appointment of *Pratikants* continues for two months.

The wards for women who had been delivered appeared to us always extremely clean, well-aired, and quiet. The great degree of quietness, in a ward containing twelve or fourteen children, was a circumstance, indeed, which excited the attention of all visitors. The delivery-ward was less orderly, and when we considered that it served, most improperly, as a parlour for the assembled students before the visit, it could not be expected to be otherwise.

Children's beds are scarcely ever employed in the clinic. The children are laid by their mothers' side. Swaddling, a barbarity almost unknown in England, but which holds its ground in many parts of the Continent of Europe, is not permitted. No purgative is given immediately after birth. After a few hours the breast is given, the mother continuing in the reclining posture. Many of the mothers, indeed, refuse to give the breast to their children, knowing that in not many hours, they are to be sent to the foundling-house. In a year after, scarcely any of these children, who are now so kindly nestled in the bosom of their mothers, are alive.

Small as the rate of twopence halfpenny a-day is, it is surprising how early after delivery the patients leave the hospital, in order to save this expense. We have been assured that frequently on the second day, and sometimes even the next day after delivery, they give up their child to the foundling-house, and return home. The greater number leave the hospital at the end of a week. Very few remain two weeks.

For several years past Professor Boër has given no clinical lectures. Neither is there any regular system of instruction in the practice of midwifery followed in the clinical school, nor is there any demonstration of the obstetrical instruments, nor any exercising upon the phantom or machine, under the immediate direction of Professor Boër. The principal part of the instruction to be gained at this clinic, must be gathered from his occasional remarks and conversational examinations. His assistant, indeed, gives *privatissma*, both to male and female pupils, at ten or fifteen paper-guldens.

Professor Boër is a pupil and a partizan of the English school of midwifery. His forceps are nearly those of Dr. Hamilton; but he almost scoffs at instruments, and like Dr. William Hunter, sums up his advice for difficult cases, in the word—patience. He says plainly that midwifery is better understood

in England than in any other country. Little, therefore, is to be learned in the clinic of Professor Boër of the artificial part of midwifery; while the best opportunity is afforded of estimating the value of the *ars obstetricia per expectationem*. To a treatise which Professor Boër has published, he has given the title of "Elementa Medicinæ Obstetriciæ Naturalis." This work is distinguished for the classic taste with which it is written.

With regard to the position of the head in natural labour, Professor Boër describes the occiput as looking forwards and the face backwards, in opposition to those who assert that the occiput is turned towards the sinistro-anterior side of the pelvis. He blames severely the phrase axis of the pelvis, saying, that though a curved line of direction may be described, the axis of a bent cylinder is nonsense. With the English, and in opposition to the French and especially to the Dutch, he believes neither in the natural enlargement of the pelvis during pregnancy or in labour, nor in the possibility of artificial enlargement by division of the cartilage of the symphisis, or the possibility of sufficient separation of the ossa innominata from one another, without dangerous laceration in their articulations with the sacrum. When there appears to be no disproportion between the head of the child and the cavity of the pelvis, and no symptom particularly urging the acceleration of the labour, such as convulsions or hæmorrhagy, he considers a face-presentation as natural. He allows the labour to go on for a whole day without turning, or perhaps leaves the case entirely to nature. Scarcely two cases in eighty such presentations, has he found to require the employment of the forceps. Similar practice is followed in foot and breach-presentations. Has the body of the child been torn away by some unskilful operator, and the head left in the uterus, or has a portion of the placenta been left, and has the uterus closed; Professor Boër believes that nothing is to be done, so long as the os uteri continues in that state.

The medical treatment of the women who have been delivered in the clinic, is in general so extremely simple, that Professor Boër is wont to say, that they cure every thing there with beer-soup, and require neither great learning nor dear drugs. The number of puerperal diseases which do occur is very small. This is probably owing in a considerable measure to a regulation, which is strictly followed, that no woman shall be left twenty-four hours after delivery, without having a clyster given her, if her bowels have not been opened. In puerperal fever, Professor Boër is a friend neither to blood-letting nor to strong

saline purgatives; but trusts, as in many other cases, more to nature than to art, ordering little more than some powders of ipecacuan in the commencement, clysters, some spoonfuls of tincture of rhubarb, a little of Dover's powder, and emollient cataplasms to the abdomen. In the pain of the inferior extremities after delivery, with or without œdema, Professor Boër has derived great advantage from a blister applied like a garter under the knee. He maintains that abscesses of the mamma are never to be opened with the knife, but are to be treated with poultices till they open of themselves, after which neither lint nor ointment is to be applied. The cause of such abscesses, he considers to be the want of timely putting the child to the breast and of regular sucking. To sore nipples, he applies cloths dipped in warm water, and orders the child to be continued at the breast, its saliva being the best remedy.

As soon as Professor Boër sees aphthæ in a child, he concludes that it has had tea, sugar, or syrup, or that it has used a sucking-cloth. Any such foreign irritation, acting upon the tender mouth of the child, causes aphthæ. In the clinic, as the children get nothing but their mothers' milk, aphthæ are exceedingly rare, whereas that disease is extremely common in the foundling-house. In the ophthalmia of new-born children, Professor Boër rejects all collyria, as irritating and likely to increase the inflammation. He rejects also the washing of the eyes with milk, as it is apt to be sour. He places by the bed of the mother two cups of cold spring-water. In the one she dips a bit of linen, and in the other washes out the bit which she has removed. These are frequently applied over the eye-lids. Under this treatment the inflammation diminishes, the eye-lids are prevented from adhering together, and the purulent discharge is said to be averted.

Those who wish to become further acquainted with the opinions of Professor Boër, we must refer to the work of which we have already given the title, and of which a new edition in the German language has lately appeared, in two volumes. It is sincerely to be lamented, that this justly-admired teacher should have had to complain of the bad faith of some of his pupils. "Qua quidem sinceritate non propter verba et sententias litigamus, sed facta vindicamus; et cum labore exquisita; et inventa; et communicata; et monstrata; vigiles noctes et incertos dies; tot omissa lucra ex privatis; tot conata; tot experimenta et pericula; et ipsos morbos. Inde aliqua passim morositas nobis, ne tamen ex animo, sed a crebra irritatione, et victa aliquando patientia."

### THE MUSEUM OF MORBID ANATOMY.

This Museum is attached to the clinic for internal diseases; and there is no part of the School of Vienna, which more strongly marks the sincere wish of the Austrian government to render the system of medical education complete. A prosector, who acts also as *Anatomicus Forensis,* is appointed to examine with care the dead bodies of those who die in the hospital, and to preserve such parts as may prove useful pathalogical preparations. He lives within the walls of the hospital; and receives such a salary as may prevent him from withdrawing his attention from this office towards other pursuits. The museum consists of upwards of six hundred valuable preparations, the greater number of which are preserved in alcohol. A *catalogue raisonné* has been published by Dr. Biermayer, the present prosector, in which 586 of the preparations are described, under the title of "Musæum Anatomico-Pathologicum Nosocomii Universalis Vindobonensis, 1816."

We visited this museum in company with Professor Joseph Frank of Wilna, and experienced the most polite attentions from Dr. Biermayer. The following are some of the preparations, which we noted as remarkable :—

1. Congenital elephantiasis, syphilis, and variola, in different subjects.
2. Lobulus Spigellii, included in an umbilical hernia.
3. Ulcer of the pericardium.
4. Skull of a woman, 23 years of age, blind from amaurosis for seventeen years. The skull half-an-inch thick, the sutures abolished, and the diploe so compact that the skull weighs twenty-nine ounces, being seventeen ounces above the ordinary weight.
5. A vomica of the liver opening into the cavity of the thorax.
6. The stomach opening through the parietes of the abdomen in the epigastrium.
7. A semiuterus, with one tube and one ovary, taken from a woman who had had four children.
8. A pin covered with calculous incrustation, found in one of the posas muscles.

### THE FOUNDLING HOSPITAL.

The Foundling-House is under the same direction as the General Hospital; but stands on the opposite side of the street, and has its own physician, surgeon, and overseer. Of late years it has been much improved by the care of government,

and the exertions of a society of the ladies of the Austrian nobility.*

All attempts to rear the children in the hospital itself had failed. In the most favourable years, only 30 children out of the 100 lived to the age of twelve months. In common years, 20 out of the 100 reached that age, and in bad years not even 10. In 1810, 2583 out of 2789 died. In 1811, 2519 out of 2847 died. Like the cavern of Täygetus, this hospital seemed to open its jaws for the destruction of the deserted and illegitimate progeny of Vienna. The Emperor Joseph II. frequently visited this hospital in person, and upon one occasion he ordered Professor Boër to make a series of experiments with all kinds of food, that it might be ascertained how far diet had its share in the mortality. Twenty children were selected, and fed with various kinds of paps and soups, but in a few months most of them were dead.

In 1813, the government enacted that the foundling-house should serve merely as a depôt for the children, till they could be delivered to the care of nurses in different parts of the country. Already, this plan has in part answered the benevolent intentions of those who supported it, and given credit to the opinion of the Medical Faculty, who, in their Report upon this subject, attributed the mortality in the foundling-house, not to the want of care, food, or cleanliness, but to the crowding together of so many children, to the unavoidable deterioration of the atmosphere which hence resulted, to the noise, and to the contagious diseases to which the children were exposed, and especially contagious diarrhoea. This hospital still continues to contain upwards of seventy nurses, and more than twice that number of children. Every nurse has her own bed, and beside it two children's beds. In general, each nurse has her own child committed to her care, and another child.

### THE JOSEPHINE ACADEMY.

This academy is situated in the Alster Vorstadt. Considered as a building, it is one of the most splendid edifices in Vienna. The Emperor Joseph II. was the founder of this institution, the

* This is called the Society of Noble Women for the Promotion of the Good and Useful. In 1814, the following were among the applications of their funds:

| | *Guldens.* |
|---|---|
| Care of Foundlings, and Premiums to Nurses, - - - - | 9871 |
| Institution for the Instruction of the Deaf and Dumb, - | 2492 |
| Institution for the Instruction of the Blind, - - - - - | 3349 |
| Care of Patients with Diseases of the Eye, - - - - - | 3806 |
| Support of poor lying-in Women, - - - - - - - - | 1250 |

object of which is to supply the Austrian army with able physicians and surgeons. On the front of the academy is the following inscription: Munificentia et Auspiciis Imp. Cæs. Josephi II. P. F. Schola Medico-chirurgica, militum morbis et vulneribus curandis sanandisque instituta, æde et omni supellectile salutaris artis instructa, Anno R. S. 1785. It was opened with much ceremony upon the 7th of November 1785, and a gold medal of the weight of 40 ducats was struck upon the occasion. The first director of the academy was Brambilla, the author of the "Instrumentarium Chrirurgicum," and other works. To him were intrusted the making of the statutes, and the arrangement of the whole institution.

The Josephine academy is completely separated from all other schools. It is under the direction of the minister of war, out of whose treasury the salaries of the professors and all other expences are defrayed. The number of pupils admitted is 200, of whom fifty receive a monthly allowance from the academy. Having finished their attendance of two years, to which period of time the course of study extends, they undergo a severe examination, are promoted to the degree of doctor in surgery, and appointed to a regiment. The academy no longer possesses the power of granting the degree of doctor in medicine.

There are five professors and a prosector in the academy. The professors belong to the army, being staff-physicians, and they bear the title of imperial counsellors. The greater number of them reside in the academy. Their lectures are delivered in German. The following is a list of their names.

Field-physician-in-chief, Beinel von Bienenburg, Director.

Professor and Vice-director, Von Scherer, brother of the Professor in the University—Anatomy and Physiology.

Professor Zimmerman—Chemistry and Botany.

Professor Castellitz—Therapeutics.

Professor Zang—Surgery.

Professor Schmitt—Midwifery. His lectures are attended by male and female pupils.

The pupils of the Josephine academy have abundant opportunities for the practical study of their profession, there being three clinics attached to the institution. The patients are soldiers and soldiers' wives, chosen from the great military hospital, which is situated close to the academy, and is fitted up for 1200 patients.

The Medical Clinic is under the care of Professor Castellitz. The visit is from six to seven in the morning.

The Surgical Clinic is in the hands of Professor Zang, a

surgeon of very distinguished merit. The visit is from four to five in the evening. The clinic consists of seventeen beds.

Professor Schmitt has an Obstetrical Clinic, in which from 70 to 80 soldiers' wives are delivered in the course of a year.

To all the lectures and clinics strangers are admitted, who previously leave their names with the several professors, except to the obstetrical clinic, which is particularly designed for the pupils of the academy. The clinic of Professor Zang is much frequented by strangers. Indeed that gentleman is looked upon as one of the first surgeons in Austria. He is at present engaged in a work, two volumes of which have been published, upon operative surgery, which promises to become classical in medical literature.

The library of the academy is rich in books of medicine, surgery, anatomy, botany, and natural history, and is adorned by a bust of Joseph II. by Ceracchi. It is open only to the professors and pupils of the academy.

The collection of natural history contains specimens from the three kingdoms of nature, but chiefly of such objects as are interesting from their use in materia medica and practical chemistry.

The collection of all kinds of surgical instruments, bandages, and machines, is extremely magnificent.

The anatomical museum is distinguished for its collections of skeletons and diseased bones, and of pathological preparations in wax, but above all for its rich collection of wax preparations illustrative of descriptive anatomy and midwifery. The preparations of this collection were executed in Florence, under the direction of Fontana and Mascagni, and are indeed an exact copy of the collection of the same kind in the Museo di Fisico at Florence. This collection occupies seven apartments. Two apartments upon the second floor contain the preparations illustrative of midwifery. This museum is open every Thursday, and is visited by all classes of the people. The Florentine collection is much admired by the crowd, whom it is well calculated to surprise. Every preparation lies under glass, upon a white silk cushion fringed with gold. The artists have not spared ornament even to the preparations themselves, which are as gay as colours can make them. It is well known that they were executed from drawings, but it may startle our readers a little to hear, that a series of engravings, taken from these preparations, is now publishing at a great expence in Vienna. Privatissma are also given by the prosector of the academy, in which these preparations are demonstrated. We never could look at the collections of wax preparations in the

Museo di Fisico at Florence, and in the Josephine academy of Vienna, without acknowledging them to be excellently suited for teaching anatomy to grand dukes and emperors, or for affording an hour's amusement to any honest citizen whatever, curious perhaps in such matters. That they are of any considerable utility to professional students of anatomy, is by no means so evident.

The Josephine academy is furnished with a botanical garden.

The academy has a perpetual director and secretary; perpetual members or professors; actual members, or physicians and surgeons; foreign honorary members; and corresponding members.

THE CABINET OF INTESTINAL WORMS.

This is a part of the Imperial Museum of Natural History, but is under the particular direction of Dr. Bremser, and forms of itself an object of considerable interest, from the great number of specimens which it contains, and from the pains which have been taken to arrange the whole, and even to display the individual specimens. Dr. Bremser practises as a physician in Vienna; he is at the same time a zealous cultivator of natural history, and is perfectly enthusiastic in this particular pursuit, to which his office as conservator of this cabinet directs his attention. He has dissected no fewer than fifty thousand animals, with the sole view of detecting the various species of worms, which sojourn in their intestines and in other parts of their bodies. All the animals which die in the menagerie at Schoenbrunn are delivered to Dr. Bremser for this purpose, and no expence is spared to procure dead animals of rarity, including foreign birds and fishes.

The method taken by Dr. Bremser to detect the smallest worms is extremely precise, and often astonishingly successful. He slits up the intestines, and carefully collects their contents, which he sets aside for examination. Having carefully gone over the internal surface of the intestines which he had emptied, he proceeds to examine the contents in small quantities mixed with water, and poured into a flat glass-saucer, the bottom of which is japanned black, surveying each quantity in succession through a microscope. The same kind of saucers he also employs to display the smaller worms, which being mostly white, are rendered extremely evident by the black ground on which they are thus placed.

The preparations are arranged with much order and neatness. We see each species of worm taken from a complete series of animals, beginning with man, and passing through the different

genera of quadrupeds, birds, and fishes. When we visited the cabinet with Dr. Sprengel junior, Dr. Bremser shewed us also drawings of most of the species, both of the natural size and magnified. They are executed with great beauty upon a black ground. Some of them have been already engraved, and will appear in a work upon intestinal worms, which Dr. Bremser is preparing for publication.

Dr. Bremser is one of those who doubt the accidental introduction of the eggs of worms into the body, and compare their origin to that of the infusoria. In the cure of tænia, Dr. Bremser is not friendly to drastic purges. He holds the filix mas to be more powerful against the tænia lata than against the tænia solium. One of his favourite remedies is that of Chabert; namely, three parts of oleum terebinthinæ and one of oleum cornu cervi fœtidum, or oleum animale empyreumaticum, which having been left together for several days, are to be distilled, and three-fourths drawn off for use. One or two tea-spoonfuls are to be given morning and evening. Four ounces are usually sufficient for the expulsion of a tape-worm. Dr. Bremser observes, however, that sometimes on the day following the first dose of this remedy a portion of the worm is discharged, but afterwards no considerable part of it is seen in the excrements, although the symptoms of the disease have entirely ceased. In this case the dead worm undergoes the same changes as any dead animal matter introduced into the stomach; it is dissolved and digested.

### THE INSTITUTION FOR SICK CHILDREN.

This Institution owes its origin to Dr. Mastalier, a celebrated and benevolent physician of Vienna. It is at present under the care of Dr. Goelis, at whose house in the Wollzeil Street the visit is daily held from three to five o'clock in the afternoon. Students who previously intimate their wishes to Dr. Goelis, are permitted to attend, and have thus an opportunity of seeing the diseases of children treated with much skill and attention. The average number of patients is 500 monthly.

Dr. Goelis has undertaken the publication of a series of monographies upon the different diseases of children, to which diseases his practice is nearly confined. The vast opportunities of observation, the care in conducting this institution, and the numerous dissections of those children who die, lead us to hope much valuable information from these works, the first volume of which we have already received.

## Art. VIII. *On the Ovum of Birds, by H. Dutrochet, M. D.*

(Communicated by the Author.)

The egg of birds appears in the ovarium under the form of a small yellow spherical body, which gradually increases in size till it is detached from the ovarium, and falls into the oviduct. Here it becomes enveloped in albumen, and receives a calcareous incrustation, after which it is expelled. This is all we know of the phenomena which the eggs of birds exhibit previous to their exclusion. It has been generally believed that the egg is detached from the ovarium by the rupture of the slender pedicle by which it is connected to that organ, in nearly the same way that the fruit, when it has attained its full maturity, drops from a tree. However probable and well supported by analogy, this opinion may appear, we shall find that it will not stand the test of observation.

If we examine the egg of the hen in the ovarium, we observe numerous blood-vessels ramifying over its whole surface. These vessels belong to a membrane, under which there is another equally vascular. These two membranes, which completely envelope the egg, are supplied with the same vessels, and secrete the bland substance composing the yolk. If we cautiously open the second of these membranes, we find under it a third membrane, white and diaphanous, extremely delicate, and quite detached from the vascular membrane which closely covers it. This third membrane is not vascular, but seems in its nature allied to epidermis. It is the immediate covering of the yolk of the egg, which at this time is but imperfectly formed, so that its membrane lies loosely about it like a sac. The cicatricle *(cicatricule)* is placed opposite the site of the pedicle which attaches the egg to the ovarium, and the epidermoid covering of the yolk may be raised with equal facility from above the cicatricle, as from the rest of the surface of that body. When the cicatricle is exposed, we perceive that it is formed of a white bland substance which is not separated by any membrane from the yellow matter, but merely lies over it. It is in this white substance that the first rudiments of the embryo are developed after incubation. In this substance, therefore, we find the germ, which has no connection with the proper membrane of the yolk. I have taken the utmost pains to determine this fact. The proper membrane of the yolk may be removed without exhibiting the slightest sign of adhesion to the cicatricle, which it leaves perfectly entire. If we examine this membrane by the microscope, at the point where it covers the

cicatricle, we cannot discover the smallest proof of a solution of continuity, nor the slightest difference of organization from what is presented in the other parts of the membrane. At the point opposite to the cicatricle, we observe when the egg approaches to maturity a whitish line or streak, which occupies nearly a third of the little sphere. This line indicates the approaching rupture by means of which the egg will escape from the pouch in which it has been confined. In fact when the egg is separated, the pouch formed by the two vascular membranes which cover it, opens in the direction of the line which I have just pointed out, and the egg enveloped in its epidermoid coat, which is unconnected with this pouch, quits the ovarium and is laid hold of by the broad extremity of the oviduct. The sac or pouch, after the escape of the egg, resembles very much the bivalve capsule of vegetables; being now become useless, it decays, diminishes rapidly in size, and finally disappears altogether.

The egg enters the oviduct covered with a single membrane, extremely fine and of the nature of epidermis. On arriving in the interior of this canal, it soon takes on a second covering, a little thicker than the first: This second envelope is the *chalaziferous membrane (chalazifère)* of the yolk. This membrane, formed on the internal surface of the oviduct in consequence of the peculiar irritation excited by the presence of the egg, is applied to the egg, and juts out before and behind so as to form the prolongations called *chalazes*. Furnished with this second membrane, the egg advances farther into the oviduct, where it becomes deeply imbedded in albumen. The egg still advances, and receives a new covering formed by the concretion of the fluids poured out by the parietes of the oviduct. It is the first layer of the membrane of the shell which surrounds the albumen, and attaches itself to the loose extremities of the two *chalazes* which extend from the albumen. Another membrane still, exterior to this, is formed, which is the second layer of the membrane of the shell. By this time the egg has got beyond the half of the oviduct, and farther on it receives its calcareous envelope. At last, when the egg is completely furnished with all its covering, it is expelled.

Thus the egg of birds is provided with six different coverings, one only of which originally belonged to it: the other five it receives in the oviduct. These six envelopes are, reckoning from within outwards—

1. The proper membrane of the yolk.
2. The chalaziferous membrane.
3. The albumen.

4. The internal layer of the membrane of the shell.
5. The external layer of the membrane of the shell.
6. The calcareous shell.

The two first membranes are closely applied to each other, and cannot be separated after the egg is laid, but I have found them loose and perfectly distinct at the period of incubation. The chalazes and cicatricle always observe determinate relative positions, the cicatricle being constantly situated on the equator of the sphere, of which the chalazes occupy the poles, or nearly the poles, for these membranes are not always placed in the direction of the axis of the yolk. They divide that body into two parts of unequal size. The one opposite to the cicatricle being the heaviest, always tends to occupy the lower situation, so that the cicatricle, being always uppermost, is disposed in the most favourable manner for receiving the influence of the heat of the bird during incubation. This mechanism, simple as it is admirable, is the result of the nature of the previous relations between the situation of the egg in the ovarium, the position of the broad extremity of the oviduct, and the form of that canal. The egg presents to the mouth of the oviduct that part of it which is opposite the cicatricle. The mouth of the oviduct being placed laterally, transmits the egg in the same position in which it received it, that is to say, the cicatricle will be placed on the equator of the spherical yolk, the axis of which will be found nearly in the direction of the oviduct. The oviduct is so formed that its axis is not exactly the same as that of the yolk. This last is divided by the chalazes into two unequal parts, the smallest of which is on the side of the cicatricle.

From these observations it follows, that the embryo contained in the cicatricle has no organic connection with its parent, as it does not adhere to the proper membrane of the yolk, and that this does not itself adhere to the vascular membrane which contains it. This fact accords with what is generally observed in the vegetable kingdom. The vegetable germs, from the moment that they appear like greenish or whitish points, are devoid of all connection with their capsules, and consequently with the ovaria. It is probable that the same is the case in the animal kingdom. I have just shewn by my observations, which are the first that have been made on that subject, that this is the case in birds.

I have demonstrated that the egg contained in the capsule of he ovarium has but one proper membrane under which the substance of the yoke lies loose. This observation goes to overturn the theory of Haller concerning the existence of the chick prior

to fecundation. That illustrious physiologist having observed that in an egg on which the bird had sat, the yolk was enveloped by a portion of intestine, concluded from this, without any further examination, that that envelopement was original, and had taken place in the ovarium, previous to fecundation. This proof, so slight and hypothetical, that the chick exists before the action of impregnation by the male, vanishes on a more careful observation. I have shewn in my researches on incubation, that the intestine of the chick entered the yolk by a a developement which successively extended itself over the whole periphery of the yolk. My present observations confirm the former, in demonstrating that the yolk has originally but one proper membrane, which I have in my researches on the coverings of the fœtus, denominated the *second epidermis* of the yolk. There is therefore no ground for supposing that the chick exists prior to fecundation.

My researches on the egg of the batracians have proved, that that egg is really a yolk containing a bland matter like the egg of birds. Does not the existence of this bland matter, which is undoubtedly secreted by the parent, prove that in these reptiles, the egg is not originally enveloped by the embryo? The observations of Spallanzani, however, which I have repeated with great care, would seem to establish beyond a doubt the existence of the embryo previous to fecundation, which, we know, operates after the egg is laid. The egg supplied from the ovarium with a black covering, has its two extremities, after fecundation, developed into a head and tail; in short, the egg becomes a tad pole; the black envelope becoming the skin of the tad pole. In this case I am inclined to think, that there exists an illusion, and a very complete one. I examined with great care the egg of the *accoucheur toad*, which had not been done by any naturalist before. This egg, in its mode of developement, differs entirely from that of the other batracian reptiles. In it the embryo proceeds from the cicatricle, and resembles that of birds, serpents, and lizards, in exhibiting the first lineaments in the cicatricle, and in enveloping the yolk as it increases in size, and finally by having some of it in its intestine. It is not the egg which in this case elongates itself into a head and tail; it is not the envelope of the egg which becomes the skin of the tad pole. In a word, every appearance of existence prior to fecundation completely vanishes. Whence then proceeds this difference in animals of the same family? It appears to me that in all the batracians, the embryo originates from a cicatricle concealed by the dark skin of their egg, that the embryo developes itself under that skin, which is the proper

membrane of the egg, and that it appropriates it to itself by becoming in some manner attached to it, so that the proper membrane of the egg appears to be the skin of the tadpole, which it resembles in colour. There is one fact which seems to divest this assertion of the character of a mere supposition—a fact which I have remarked in my researches on incubation; namely, that the proper membranes of the yolk was confounded by adhesion with the different appendages of the fœtus in contact with it. If the proper membrane of the yolk is confounded by adhesion with the envelopes of the chick, it is equally possible for this membrane in the batracians to become confounded in the same way with the tadpole, which is a sort of fœtus. Hence it will happen, that in many of these reptiles the tadpole would seem to exist previous to fecundation.

From all this it follows that the theory of the pre-existence of the embryo, far from being established by any positive proofs, is only supported by appearances which may be fallacious,—a theory raised in opposition to proofs which, though not entirely conclusive, are sufficiently strong to stagger the mind of the naturalist, who can only admit facts which are strictly established. We have therefore as yet but mere hypothesis on generation, and in this respect we relapse into that darkness on which the observations of Haller and Spallanzani appeared to throw some light.

The complete state of incubation in which the egg of birds exists within its capsule, furnishes another circumstance of alliance between that egg and those of the batracians and fishes. The egg of these animals is fecundated after it is laid by means of the spermatic fluid which the male sprinkles upon it, so that impregnation takes place from the simple application of the seminal fluid to the external surface of the egg. The same happens in birds in whom the impregnation takes place in the ovarium instead of taking place after the egg is laid. How does the seminal fluid, after being deposited in the cloaca of the hen, arrive at the ovarium? We cannot answer this question, but we know that it does arrive there, and that it is in that organ that fecundation takes place, as a hen continues to lay fecundated eggs for a fortnight after she has been separated from the cock. In whatever way the seminal fluid arrives at the eggs, it is only by coming in contact with their surface that it is capable of impregnating them; seeing that they have no organic communication with the parent. It is impossible not to view with admiration the consistency of the operations of nature, even through the irregularities to which she appears sometimes to abandon herself.

Art. IX. *Méthode pour guérir les Maladies Vénériennes Invétérées, qui ont résisté aux traitemens ordinaires, par Etienne Sainte-Marie, Docteur en Médecine de la Faculté de Montpellier, Membre de l'Académie de Lyon, de la Société de Médecine de la Même Ville, et de plusieurs autres Sociétés savantes, &c. &c.* Gabon, à Paris. 1818. pp. 204.

In reading M. Roux's interesting and candid narrative of his professional visit to London, no sentence astonished and amused us more, than the one in which he states that, in this country, we as yet know nothing of venereal complaints. Had a comparison been made, and the same conclusion drawn towards the end of the last century, we should have been little inclined to admit it. The work of Benjamin Bell, for example, might with safety have been produced with any of the same date emanating from the French school, and the comparison would not have been injurious to British reputation. But since that period new regions have been discovered and explored. Excited by the genius of Hunter, led forward by the scientific researches of a Pearson, and the able investigations of an Abernethy, many eminent labourers have, in this country, been extending the boundaries of science, and diminishing the bulk of human misery. These regions we conceived were still unknown to our brethren in France: and we could not prevent ourselves from making the observation that this opinion of the narrator was the effect of ignorance;—that the remark would have been much nearer the truth, had one of our countrymen applied it to the knowledge generally possessed on this subject on the Continent of Europe.

Since, however, we have become better acquainted with the French practice in this complaint, and with the appearances which the disease generally assumes abroad, our surprise has in a great measure subsided. Well acquainted as M. Roux was with all the forms under which the disease appears in such a capital as Paris, we think that, considering his short stay in this country, the conclusion which he drew was the most probable one that he could form. Following in the French metropolis a simple, and nearly invariable mode of treatment;—producing a speedy and almost certain cure, and with hardly any uneasiness to the patient;—how is it to be wondered at, that, when in this country, he observed medical men entertaining such various and contradictory opinions;—found so many cases, under the most skilful management, baffling every effort;—the health for ever

injured, and life at last falling a sacrifice;—he should argue unfavourably of our skill, and assign the palm of superiority to his countrymen.

We had, at one time, intended to take a somewhat extended view of this interesting subject. The length, however, to which this Number has already extended, will prevent our doing so on the present occasion. We can allow ourselves only a few pages, which must be devoted to the exclusive consideration of the work at the head of this article.

It has been published within these few months, by a physician long and deservedly esteemed, who for many years has given a peculiar attention to the diseases of which it treats, and has had much practice in them in one of the largest towns in France. It may be fairly taken as a sample of the prevailing opinions and practice of French surgeons. In it we shall find many things in which we think our brethren are far behind us, and would be benefited by a better acquaintance with the ideas entertained in this country; and we too may receive some few lessons, which we should have done well to have sooner learned.

With the majority of medical men in France, the author considers gonorrhœa as a variety of syphilis. The same treatment is adopted for this as for the other forms of venereal diseases. In Paris we found the propriety of this conduct beginning to be canvassed. But undoubtedly, as in this country some twenty years since, the common practice is to treat the patient affected with gonorrhœa as if he had lues. The change of medical practice in the treatment of gonorrhœa has been really curious. A time existed, many years ago, when in this country no one thought of giving mercury for its cure; and the same observation is true with regard to France. We cannot at present dwell on the proof of this. Then, a time arrived when in both countries the mineral was regularly had recourse to. Hunter, and Whately, and many others, down to Dr. Adams in our own time, contended for the necessity of the practice in England; and Swediaur, and many others that might be mentioned, were its advocates in France. The day we believe is not far distant when the practice will be every where for ever abandoned.

As the history of this important improvement in our art is not we believe generally known, we shall state some particulars with regard to it. The idea that gonorrhœa is distinct from lues, and does not require mercury for its cure, originated with Dr. Francis Balfour, an individual long highly esteemed in Calcutta, and not unknown in this country as the author of several treatises on sol-lunar influence, fever, &c. When a student, he attempted

to establish the doctrine in a paper which he presented to the Royal Medical Society of Edinburgh, and which still, we believe, graces its records. This was as early as the year 1766. Next year he made it the subject of his inaugural dissertation. Soon after this, Dr. Duncan, senior, gave the opinion a wider circulation by inserting it in *The Annals of Medicine.* It was nearly twenty years after this period that Mr. Benjamin Bell, by his ingenious and able investigations, supported and further confirmed the opinion, and thus contributed much to bring it into public notoriety and favour. How striking the observation we now frequently hear from the lips of the older members of the profession—"It is an odd circumstance, but now we hardly ever see a case of the *old gonorrhœa virulenta.*"

If the practice of our author be inferior in this particular to that which would generally be adopted, in the present day, among ourselves, we will find much to admire in his treatment of a no less common variety of the disease—simple primary sores. These are the cases in which, within these few years, we were accustomed to salivate our patients for a month or six weeks; make them invalids, and keep them very long in a deplorable condition. He tells us that this mode of treatment has been long unknown in France. I have never, says he, attempted to excite salivation, and I believe the prudent and well-informed surgeon will follow the same practice. Salivation, he again observes, *was* in great reputation for the cure of the disease. The cure was not expected unless there was "un flux de bouche." "L'expérience de ce moyen curatif est aujourd' hui entièrement perdue pour nous, et il faudroit le reprendre comme nouveau pour rétablir les règles de son emploi." p. 22. He goes on to observe that this is the last method he would recommend, on account of its inconveniences and dangers. The treatment which he has recourse to in these cases is that which has long been the most popular in France, and which, curious to observe, was deemed, after a fair trial by one highly qualified to decide, inadequate to the cure in this country. M. Sainte-Marie's patients begin by taking a quarter, and afterwards increase the dose to half a grain of the oxymuriate, a day. Every thing convinces him that this is the best treatment. It generally agrees with every variety of constitution; it rarely excites salivation; it cures almost every form of the disease, and does not prevent the patient from comfortably following his usual avocations.

This remedy, however, though the most common, is by no means the only one which he employs. He sometimes substi-

tutes a course of calomel, and sometimes one of mercurial purges; frequently he uses the mercurial vapuor-bath; sometimes he applies the fumigation locally, and in some cases he has found much benefit result from baths in which the corrosive sublimate was dissolved. It does not appear that any of these remedies were continued after the symptoms had disappeared.

Though the occurrence may be much more rare in France than in this country, yet it cannot be denied that in the former kingdom obstinate cases are sometimes met with;—cases which do not readily yield to common treatment, and which are alike tedious and distressing in their course. It was more peculiarly with reference to these cases that the author's Treatise was undertaken. It purports to be "une méthode pour guérir les maladies vénériennes invétérées." He speaks of them in terms sufficiently strong to depict even the worst specimens we witness in this country; as "des véroles compliquées, rebelles, qui out jeté dans le corps de profondes racines, et que les maîtres de l'art tiennent souvent pour incurables." These cases are frequently caused by the charlatan injudiciously employing mercury.

The treatment which it is the peculiar object of the Treatise to recommend is what may be called "la méthode diurétique." The author makes no pretensions to originality in his proposal. He, however, claims the merit of having revived an almost obsolete, and very useful mode of treatment. It was introduced by some Italian physicians, soon after the appearance of lues in Europe, and after long possessing much reputation, was laid aside in those times of confusion and distress. It was afterwards revived, and formed the principal part of the treatment used by Valsalva and Morgagni. From the merit ascribed to it by these two distinguished individuals, in their several works, the author was first led to adopt this treatment and give it a fair trial. Many cases in proof of its success are given in detail in the body of the work; and the author sums up his ideas of its value, by assuring his readers "qu'aucune autre méthode anti-vénérienne n'est à la fois plus simple et plus commode, plus efficace et plus sûre." The method consists in giving a decoction of sarsaparilla, in large quantities. The author does not consider the herb prescribed as a matter of complete indifference, yet he does not ascribe the cure to the sarsaparilla. His notion is that the vehicle in which it is given benefits "à la manière des eaux thermales." A very considerable quantity, four pints, is taken every day, and he imagines that

this quantity of fluid, by exciting the various secretions and excretions, removes any lurking poison, supplies healthy juices, and renovates the whole frame. In confirmation of this theory he tells us that J. Mannard and Massaria employed a decoction of guaiacum ; and that Valsalva and Morgagni used the *aqua Stibii*, the *aqua Corsi* of the Italians, a decoction of antimony. Willing, however, to give credit to the many statements that are made of the superior virtues of sarsaparilla, he has given it a preference. Given in this large quantity (four ounces of the root is the quantity used in making the daily dose), it acts considerably on the kidnies and skin. It sometimes also, for a few days, excites a slight diarrhœa.

We have said that he gives the sarsaparilla a preference. It is, however, by no means an exclusive one. Nay, it is not the herb which he most recommends. It is very expensive, and this circumstance in France, as in our own country, often leads to fraud and deception. On this account he was induced to give a trial to the *Carex Arenaria*, which, in Germany, is called the sarsaparilla of the poor. Murray* has said much in its recommendation. Gleditch, in two Memoirs presented to the Royal Academy of Sciences at Berlin, has attempted to show that it is superior in every respect. Our author, after a trial of ten years, considers it of at least equal value. Its price is very moderate : it may easily be procured, and he feels inclined strongly to urge its adoption. We are not aware that the root has been introduced into this country. It seems to deserve a trial.

We have said, in introducing these remarks, that we imagined our brethren in France were unacquainted with those diseases which in this country are known under the appellation of pseudo-syphilitic. Our author, whilst he informs us of his own acquaintance with them, gives proof of the general correctness of the statement. He tells us that he is "peut-être" the first to point out a disease, which, from want of minute examination, is often confounded with chancres,—with syphilis. He goes on to observe, "Je n'ai point trouvé cette maladie décrite dans les livres, et jusqu' à présent je ne la connois que par mes propres observations." He describes it as consisting of superficial aphthæ on the prepuce, containing a white or rose-coloured fluid, elevated on a little pustule about the size of a small pea. It appears after connection, often suddenly, and ripens quickly. It is painful. After some days a crust

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* Apparat. Medicam. Gottingæ. Tom. 5. p. 310.

forms on its surface. It then subsides, but is very apt frequently to return. Cleanliness is stated to be all that is necessary for the cure. The author mentions that he has seen a great number of these cases. He has quoted some which are sufficiently interesting. In one the patient had intercourse with his wife, and the disease did not spread. The patients were generally astonished at their not taking mercury. They consulted other surgeons who strongly advised its use. M. Sainte Marie, however, continuing firm in his opinion, to the astonishment of all they got well without it. He mentions having seen a disease of a similar nature, though differing in minute particulars, occurring in females. It consists of redness and excoriation of the parts, with a crop of papillæ in the neighbourhood. Other symptoms are given, but these we need not minutely trace. We think it unnecessary to attempt to point out the class, in which those who have most successfully laboured in this field, would probably place these varieties of the disease.

Another lesson which he tells us his observation had taught him, is the bad consequences produced by mercury, when this has been given in too great quantity, or for too long a time. It then produces and keeps up a cachexia, which is very similar to that which arises from the venereal poison. He advises the mercury to be speedily given up in these cases, and recourse to be had to the decoction of woods, to cinchona, wine, and other tonic remedies. We have dwelt the less on this part of the subject, because however new and important these views may be in France, they have been long familiarly known in this country. We do not find that much is to be learned by the limited observations of a single individual.

We have stated that the author imagines that he is perhaps the first who has distinguished these sores from those that are more properly regarded syphilitic. It appears almost incredible that he should not have heard of what has within these some years been doing in this country. Many of our countrymen, we ourselves passed through Lyons previous to the publication of this work, and had a good deal of conversation with several of the medical men. The author has moreover been reading the publications which have lately appeared on the subject. Swediaur's last edition is as late as 1817. We need not say that this author has had many ample opportunities of becoming acquainted with the opinions entertained in this country. M. Sainte-Marie quotes him on the impropriety of prescribing mercury on all occasions.

The work we have been considering was lately put into our hands by a foreigner, who told us it contained much that was new and exceedingly curious. This first directed our attention to it. We cannot perhaps say so much to our readers. We think, however, that its perusal must afford satisfaction. It shews the state of opinion and practice in France. We cannot but perceive that foreigners may derive information from us on the subject. It must not however be forgotten, that the opportunities for investigation are different. Perhaps the diseases observed are not the same. We feel sorry that our limits have confined us so closely to the object immediately before us, and now prevent us from entering further into detail. On some future occasion we promise ourselves much pleasure from a more extensive review of the subject.

# ANALECTA.

## 1. *Dry Frictions.*

It is a fact, of which too little avail appears to be taken at present in the practice of medicine, that the greater number of those substances which act as powerful remedies upon the body may be introduced by means of friction, through the integuments into the circulation. As for those frictions which the ancients practised so much with oily matters, they are now, we may say, laid aside, both from medical and from gymnastical use. Yet their effects in giving agility to the body, in preventing excessive perspiration, and in dissipating fatigue, cannot be questioned. The answer of the old soldier to Cæsar, who asked him by what means he had reached so advanced an age free from the inconvenience of decrepitude, is known indeed to the classic scholar; but the first part of the regimen is neglected as well by old men as by those who advise them regarding their health: Oleum extus; mulsum intus. These frictions were performed first with warm cloths, and then with the hand dipped in oil. We have a short statement of their effects in the following sentence of Pliny. Vehemens fricatio spissat, lenis mollit; multa adimit corpus, augit modica.

The Egyptians and Turks are in the habit of employing a peculiar variety of friction, consisting in pressing with the hands, or kneading, so to speak, in succession, every part of the surface of the body. This is done while the person is in the bath, and is performed by females or children who have delicate hands. This custom is observed to have the effects formerly attributed by Pliny, and also by Hippocrates, to moderate frictions, namely, that of restoring a degree of corpulency to those who are emaciated.

The following fact related by M. Ardouin in his *Essai sur l'Usage des Frictions Seches*, upon the authority of Professor De La Peina of Madrid, is singular, and in some measure illustrates the effects of woollen garments worn next to the skin, as well as of dry frictions long continued. Certain Spanish monks wear habitually woollen cloth next to the skin; during winter, they have stockings of the same kind; so that they are almost isolated, and communicate with the atmosphere only by the head. This dress has some times served to attract a great degree of consideration to these monks. The continual friction of their body with their clothes produced a disengagement of electrical fluid, of which the head alone acted as conductor, serving to return it to the general reservoir; so that when the monks went out in cold and dry weather, before day break, from their cells to the church, their heads sometimes appeared surrounded by a luminous

circle; a circumstance which led the ignorant to believe that there was something supernatural in these men.

The Russians are in the habit, when in their bagnios, of flagellating themselves with little rods. This is nothing more than a violent mode of friction, by means of which they elevate the tone of their skin to such a degree, that on coming out of the bagnios they not only endure the impression of a very rigorous temperature, but will plunge with impunity into an iced bath, or roll themselves in the snow.

However useful the employment of frictions may be, there is no doubt that their discontinuance may prove extremely dangerous, if they have been long continued habitually, or repeated even at considerable yet regular intervals of time. Much the same accidents will arise from their sudden discontinuance as take place upon the omission of a blood-letting to which an individual has accustomed himself, or the absence of a hæmorrhagy which has been regularly periodical in its accessions. M. Ardouin mentions the following fact, which may serve as a proof of these observations. In Passion-week, the people of Barcelona were in the habit of uncovering the superior part of the trunk of their bodies, and of attending in this state the procession, flagellating themselves at the same time in a violent manner. The arrival of the French army in that city prevented this barbarous custom from being performed. During the following years, at the wonted period of flagellation, there appeared in those individuals who had been in the habit of inflicting upon themselves this kind of punishment, a variety of inflammatory affections of the mucus and serous membranes, which these superstitious persons did not fail to ascribe to the chastisement of heaven for their neglect of a religious duty, but which their physicians attributed with greater reason to the suppression of a periodical irritation of the skin. They therefore prescribed rubefacients and blood-letting, and reaped the best effects from this treatment.

### 2. *Delivery of a Bicephalus.*

When M. Ratel, *Officier de Santé* at Bourbourg, was called in, two arms and a head had already protruded from the vulva, and were in a state of commencing putrefaction. The efforts made by the midwife had almost detached these parts from the trunk, but had failed in procuring its exit. The woman was exhausted by several days' sufferings. M. Ratel first of all separated the head and superior extremities. Having then ascertained the presence of a second head lying in the left iliac fossa, and connected with the same trunk, he searched for and brought down the feet, and thus ended the delivery. The two heads of the fœtus had the same direction, the four arms and four shoulders being on a line with each other; but the trunk was single, the vertebral column being bifurcated only at the commencement of the cervical vertebrae. *Bulletins de la Faculté de Médecine de Paris,* 1818. *No. II.*

3. *Asthma.*

In the Journal de Médecine, there is an interesting article on the Asthma of old people, by M. Rostan. The object of the author is to overturn the opinion which has been entertained that this is a nervous disease, and to show from numerous dissections, as well as from a consideration of the symptoms, that it arises in every instance from an organic affection of the heart or organs of respiration. Numerous cases are detailed, in all of which, after death, alterations in the structure of the heart and arteries were found, with extensive disease of the lungs and bronchiæ. The morbid appearance most uniformly met with, was thickening of the left ventricle of the heart —which the French call Active Aneurism. The heart itself was frequently found amazingly enlarged in volume, with dilatation of its cavities; ossification of its valves, and of those of the Aorta; the Aorta itself contracted at its origin, and generally affected with ossifications, some of them of the size of an inch. In some cases active aneurism of the Aorta was observed.

The morbid organic alterations in the structure of the lungs in these cases were still more striking. Adhesions between the lungs and pleura were constantly met with, some of them evidently of long standing, and effected by means of patches of organized lymph; effusion of serum into the cavity of the chest; the bronchiæ exhibiting marks of inflammation, and generally filled with mucus; the lungs, in almost every case, gorged with blood, and in many instances divested of their natural appearance, and converted into a substance resembling the liver. In short, every case which was examined at the *Hospice de la Salpêtrière* exhibited some, or all of these morbid alterations. The subjects were all above sixty years of age, had suffered from the disease during the greatest part of their life, many from infancy, and had for several years previous to their death been under the inspection of the practitioners at that institution. To these facts which fell under the personal observation of the Author, are added the opinions of some late authors, (Corvisart, Baumes, and Bayle,) that diseases of the heart and large vessels have a much greater share in the production of asthma than is generally suspected.

From these observations, M. Rostan concludes that the phenomena of asthma always depend on a morbid alteration in the organs of respiration or circulation, causing a congestion of blood in the lungs; and that the periodical asthma is but the first manifestation of organic affection, which, when farther advanced, produces the habitual form of the disease. We do not think, however, that the author is warranted in adopting the latter part of the conclusion, for it remains yet to be proved that organic diseases always exist in periodical asthma; and till that is established by dissection to be the case, there are many circumstances which favour the opinion that this form of the disease is frequently nervous. It very often makes its first invasion at an age when organic changes of structure rarely occur. The suddenness of

its attack and disappearance—the perfect immunity from dyspnœa enjoyed in the intervals, and the uniformity with which particular causes tend to induce or remove the paroxysm, militate against the opinion that the disease is solely attributable to organic affection. The effect of galvanism too, in affording instantaneous relief, even in cases of long standing, would seem to show that permanent organic alterations of structnre did not always exist.*

But whether we are to consider the author's opinion as established in its fullest extent or not, his researches must be deemed of no small practical importance. Whether these morbid appearances are to be considered as the cause or the effect of this most distressing complaint, or whether we are to consider them as supervening independently of the disease, their existence certainly indicates a more rigid adherence to the antiphlogistic regimen than is generally observed in asthma, and a freer use of the lancet, which in this disease is by most practitioners used with the utmost caution, and by many entirely proscribed.

### 4. *Sulphureous Fumigation.*

This method of applying sulphur in a gazeous form to the surface of the body, was first introduced by Dr. Galés of Paris. The result of the experiments and observations made on its employment, by a medical jury appointed for the purpose, was so satisfactory, that by order of Government it was speedily introduced into all the hospitals of France, and was generally recommended in practice by the physicians of that country.

It consists in applying the vapour arising from ignited sulphur to the naked body of the patient, seated for that purpose in a sort of wooden case, in the upper part of which there is an aperture for the head. To the circumference of this aperture a leather bag is attached, which is fastened round the neck, and thus prevents the fumes of the sulphur from reaching the eyes, nose, or mouth.

The effect of the fumigation is to produce, in the first instance, increased action, and subsequently most profuse perspiration; greater, indeed, than we have ever seen produced by any other means. Hence, it appears to be indicated, 1st, where quick and sudden perspiration is of benefit, and 2dly, where sulphur appears to have a specific action.

The rapid and striking cures performed by means of sulphureous fumigations, soon after their first introduction, particularly in cases of psora, herpes, and some other diseases of the skin, gave rise to such exaggerated statements of their efficacy, as to throw considerable doubts over the whole matter. That this method of applying sulphur is a very powerful agent, can admit, we think, of little doubt; and we are the more disposed to maintain this opinion from what we saw during our residence at Vienna.

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* See Dr. A. P. W. Phillips' interesting "Inquiry into the Laws of the Vital Functions."

The sulphureous fumigating baths were introduced into Germany by Dr. De Carro, of Vienna, whose name is already ennobled in the annals of humanity by the introduction of vaccination to the Continent of Asia. We had the honour of being personally acquainted with this enlightened and scientific physician, and from him we derived all the information we possess on this subject. He gave us every facility to inspect the apparatus he had constructed in his own house, which was much neater and more convenient than that of Galés.

It consists of a wooden case, something like a pulpit, in which a grown up person can sit with ease up to the neck. This case is plastered internally. Its floor, formed by a stone of two or three inches in thickness, is raised so far above the ground as to require three steps to get into the case. Underneath are the parts necessary for producing the fumigation. The lowest story is the ash pit, the uppermost the hearth for the sulphur, and the middle contains the fire. The uppermost division communicates freely with the interior of the case, by means of holes bored in the stone floor of the case. A pipe conveys the smoke from the division containing the fire into the chimney. Another pipe passes from the case into the chimney. This may be opened or shut by means of a valve, and after the operation is concluded, it conveys what remains of the sulphureous fumes into the chimney. From this sketch of the apparatus, the method of using it is evident. The patient, perfectly naked, steps into the case, and seats himself on a chair, which may be raised or lowered at pleasure. He places his feet upon a stool. Both the chair and stool are perforated with holes, to admit the free passage of the fumes to all parts of the body. The uppermost board forming the head of the apparatus, is now let down, so that the patient is completely enclosed in the case, with the exception of the head. Provision is made for preventing the fumes acting on the eyes, or entering the mouth or nose, as we have already mentioned. There are various methods of applying the vapour to the face, when the disease has its seat there, the most simple of which is a flexible pipe, which communicates with the sulphureous vapour.

The patient remains in the bath half an hour, or at most an hour. About five minutes before the conclusion of the fumigation, the valve in the sulphur pipe is opened, and thus all unpleasant smell is avoided on opening the door of the case. The patient now goes to bed for an hour or two.

The cases in which we have seen the sulphureous fumigation chiefly used, were cases of chronic rheumatism, psora, lepra, and other cutaneous affections, where sulphur is usually found of advantage. In all of these the benefit derived was very striking, and the shortness of the period necessary for the cure was really astonishing. We saw some cases of old chronic rheumatism, which yielded completely in a few weeks to this remedy. One reason of the great success attending Dr. De Carro's practice, was the judicious selection of cases which he made, whereas many practitioners have employed these fumigations

far too indiscriminately, and then wondered at the failures which took place.

The practice of sulphureous fumigation has been made known to the north of Germany in a work by Dr. Karsten of Hanover, under the title of "Ueber die Kraetze, und deren bequemste, schnell-wirkendeste und sicherste Heilart, durch Baden in schwefelhaltigen Daempfen, und dessen vortheilhafte Anwendung zur Behandlung chronischer Krankeiten der Haut und anderer Gebilde, nebst Beschreibung eines hierzu dienlichen Apparats, von Dr. Karsten, mit 2 Kupfern."—Hannover, 1818.

The practice is now generally adopted in most parts of the Continent, and has extended to Russia and Poland.

The same apparatus may be employed for mercurial fumigations, or fumigations with aromatic vegetable substances.

### 5. *Transactions of the Academy of Sciences at Boston.*

We have just received the 4th volume of the Transactions of the American Academy of Arts and Sciences at Boston. It contains a number of valuable papers, and is, we think, more creditable to the Society than either of the preceding volumes. We are very happy to observe in it many proofs that much more attention is given to Natural History in America than heretofore. Among the papers there is one by Dr. Bigelow, " On the comparative forwardness of the Spring in different parts of the United States." The difference is shown by a floral calendar, in which the time of flowering of a number of trees and shrubs in various parts of the country is given. This calendar exhibits a very striking difference between the two extremes taken, viz. Fort Clairborm, in lat. 31°. 50′. N. in which the peach-tree is in blossom as early as the 4th of March, and at Brunswick in lat. 43°. 53′. N. not until May the 16th. No such difference is found in Europe in an equal distance, except when produced by some local cause. The fact is a curious one, but to ascertain the fixed and regular differences, observations upon several springs should be made and accompanied with thermometrical tables, for the appearance of vegetation alone does not afford a sure ground for comparison.

The paper upon the Mineralogy and Geology of Boston and its vicinity, we think, ought not to have been inserted. As a text book for a class of students in these sciences, and to guide them in their excursions round Boston, it might answer very well; but all of it which treats of mineralogy is found in every writer upon the subject, who adopts the system they have chosen. The geological part is only a few pages, and that is all of it which has a right to a place in the Transactions. If we had space to make any remarks upon the merits of the paper, we might say, that no man ought to write upon the subject of mineralogy, who has only studied the science in the English systems, as is evidently the case with the Authors of the Outlines of the Mineralogy and Geology of Boston and its vicinity.

The other papers in this Volume are—

A new investigation of Kepler's Problem, by F. T. Schubert.

On a Mistake which exists in the Solar Tables of Mayer, La Lande, and Zach, by N. Bowditch.

On the Oblateness of the Earth, by the same.

On correcting the apparent distance of the Moon from the Sun and Stars, by the same.

On computing the dip of the Magnetic Needle, by the same.

On the Elements of the Orbit of a Comet.

On the Permanency of the Solar System, by the same.

On the Sea Serpent, by Professor Peck.

On the Storm of April, 1815, by Professor Farrar.

Account of an Electrical Phenomenon, by the same.

Observationes Carpologicæ in Kamelliam et Theam, à Professore Peck.

Remarks on Stewart's Formula, by N. Bowditch.

Description of certain Halos, by Professor Cleaveland.

On the Pronunciation of the Greek Language, by Mr. Pickering.

A Sketch of the Life and Writings of Count Rumford, by Professor Bigelow.

### 6. *The Study of Pathological Anatomy.*

There is a very interesting paper on this subject in the "Journal Complémentaire du Dictionnaire des Sciences Médicales, for November." It is by M. J. F. Lobstein, chef des travaux anatomiques de la Faculté de Médecine at Strasbourg, and is intended as a Supplement to the articles "Anatomie Pathologique de Laennec et Bayle," in the "Dictionnaire des Sciences Medicales, tom. xi. p. 46 et 61."

The author begins by a succinct history of Pathological Anatomy. He dates its origin to the sixteenth century, although he observes it hardly at that time deserved the name of a science, consisting only of a few detached observations on the injuries of particular organs. Antonio Benivieni of Florence,* was the first who directed his attention to the subject, by publishing Observations on Schirrhus of the Stomach, Ulcerations of the Epiploon, Biliary Calculi, and Polypi. His example stimulated other anatomists to open bodies, in order to study the alterations produced by disease. Kenneman† (1568) described different species of calculi—Salius Diversus‡ examined the state of parts in inflammation of the brain and mediastinum—and Schenk§ collected in his work all the curious cases which the opening of bodies had discovered up to that period. Wier|| gave an account of several

* De abditis nonnullis ac mirandis morborum et sanationum causis. Flor. 1507. In 4to.

* Calculor. in corp. hum. gener. xii.

‡ Curat. quorund. particul. morb. Bonon. 1584.

§ Observat. Med. Basil, 1584.

|| Observat. Med. Basil, 1609.

diseases of the genitals. Marcellus Donatus (1588), Forestus (1597), Fabricius Hildanus (1674), and Daniel Sennert (1637), respectively contributed to improve Pathological Anatomy by the light they threw on particular diseases. The greater part of these observations were, as our readers may well suppose, disfigured by the superstitions of the times; but they are nevertheless really valuable and curious. The same observation applies to the works of Tulpius,* Vesling,† Blasius,‡ and Stalpaart van der Wiel.§

M. Lobstein passes a warm eulogium on Harvey, and states that he had opened a vast number of bodies in order to discover the causes and seats of disease, which he would have published but for his untimely death. M. Lobstein deplores the loss of the writings of Castelli and Thomas Bartholin, the former of whom, according to Welsch,‖ has collected more than two hundred observations ready for the press. These were burnt by a fire which destroyed the library of this learned anatomist, and consumed in a moment the result of twenty years' labour.

Although several excellent works on this subject were published by Willis, Wepfer, Zernel, Plater, Pison, Sylvius, Baillon, &c. no complete work on Pathological Anatomy existed before the publication of the *Sepulchretum* of *Theophilus Bonetus*.¶ On the plan of this book Morgagni wrote his great work, "De Causis et Sedibus Morborum." M. Lobstein draws an animated and eloquent picture of Morgagni and his labours, and fully assigns him that rank which the merit of his immortal works has procured him.

Of Lieutand, who is the next in chronological order to Morgagni, our author observes, that in endeavouring to avoid the prolixity of Morgagni, he has fallen into an opposite extreme; and that his 3584 observations are merely so many insulated facts, without connection.

In Germany, Ludwig** endeavoured to reduce his observations to a narrow compass, to form, as it were, a table of organic injuries, without extending his design to general views, and without following any other arrangement than an anatomical one. The same remark applies to the works of Conradi†† and Voigtel.‡‡

We have not room to follow our author in the observations which he makes on the writers of more modern times. He mentions in terms

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* Observat. Med. editio quarta. Amstel, 1672.

† Observat. anat. et epist. Med. Hafn, 1664.

‡ Observat. anat. in hom. sim. equo, etc. acced. extraord. in hom. repert.

§ Observ. rarior. anat. Lugd. Bat, 1687.

Lugd. Bat. 1674.

‖ In initio Sylloges. observationum.

¶ Sepulchretum anatomicum, seu anatomica practica ex cadav. morb. donatis. Genev. 1679. 2 vol. in fol.

** C. F. Ludwig, Primæ. lineæ. anat. Lips. 1785. 8vo.

†† Handbuch der Pathologischen Anatomie. Hannover, 1796. 8vo.

‡‡ Handbuch der pathologischen Anatomie, vol. iii. Halle, 1804. In 8vo.

of high encomium, Sénac* and J. F. Meckel† on Diseases of the Heart—Boehmer‡ on the genital parts of women—Van Doeveren§ on Monsters—Camper on the diseases of the arm and pelvis—Sandefort on several subjects—Bleuland on the causes of Dysphagia—and lastly, our countryman Baillie, of whom M. Lobstein speaks in very high terms. In France, Bichat considerably advanced the study of Pathological Anatomy, by pointing out the analytic manner in which it ought to be studied. Reil pursued the same plan in Germany; and latterly the learned Professor J. F. Meckel of Halle, possessor of the anatomical collections of his forefathers, as he is likewise the inheritor of their talents, has published a very learned work on the subject, under the title of Handbuch der Pathologischen Anatomie, Leipzig, 1812, in 8vo.—the last part of the second volume of which has appeared this year. The first volume treats of organic changes dependent on original conformation. Subsequently he will treat of the alterations produced by disease.

M. Lobstein concludes by observing, that organic diseases should be studied under three different aspects—

1. The Anatomical examination of the organ which is altered in structure.

2. The Physiological examination of the same organ, with a view to discover how and by what means the organic change has been effected.

3. The relations between the organs altered in structure and the vital phenomena, or the symptoms and phenomena of the disease.

## 7. *Climate and Diseases of the Crimea.*

In one of the late numbers of the "Journal Général de Médecine," there is an interesting sketch of the climate and diseases of the Crimea, by Dr. Graperon, a physician settled in that country.

Crimea, or ancient Taurida, is one of the most southern provinces of Russia, and its natural advantages are such as to render it one of themost agreeable. These advantages, consisting in its peculiar situation, its delightful though variable climate, its romantic and picturesque scenery, its pure and healthy air, place it in the same relation to Russia which Provence holds to France. We should suppose that the parallel could be extended to medical views, and that it would equally be the resort of invalids; for every variety of climate from Marseilles to the north of France may be found within its circumference. Besides the advantages for sea bath-

* Traité de la structure du cœur, de son action et de ses maladies. Paris, 1749. 2 vol. in 4to.

† Physiologische und anatomische Abhandlung von ungewoehnlicher Erweiterung des Herzens, &c. Berlin, 1755. In 4to.

‡ Observ. anatom. rarior. fasc. I. et II. Halæ, 1752.

§ Specim. observ. academ. ad monstr. histor. anatom. spectant. Lugd. Batav, 1765.

ing which it offers, it abounds in saline and mineral springs. The fruits of the earth are abundant, and the water is good and fresh; the olive, the fig and the pomegranate line the sides of thehills, while in the vallies most of the medicinal plants are to be found. As yet however it is little resorted to; for while nature has done much, industry and art have done nothing. The roads are bad, the necessaries of life, and medical aid, difficult to be obtained.

The diseases of this country are determined by its situation. Catarrhal and pneumonic affections are the most common, particularly at Symphéropole, the capital, which is in the vicinity of high mountains. Strangers, such as Russians, French, Germans, and Greeks, are more liable to these attacks than the natives. This is to be accounted for from the circumstance of the Tartars being always dressed in furs both winter and summer, having their heads covered with thick and warm caps, and wearing, particularly on horseback, the *Bourka*, a sort of straw mantle, which they place in such a manner as always to shelter them from the wind.

Though these diseases are the most common, they are by no means frequent. The Tartars enjoy excellent health from the above-mentioned precautions; and, as our author observes, "*parcequ' ils usent très peu des secours de la médecine.*"

Although the variable climate and high winds occasion many inflammatory affections of the chest, it is a singular fact, that phthisis is very uncommon. Dr. Graperon tells us, that during the six years he has practised there, only seven people have died of this disease. Incipient symptoms were easily removed.

Goître is very rare in Crimea, which our author attributes to there being no vallies without outlet, and a free circulation of air; to the water being fresh and good, and only derived from snow during a short time, as the highest mountains are covered with snow only during four months.

Diseases of the eye are very uncommon, and in the hospital at Symphéropole, the refuge of all Crimea, there are only ten blind. Dr. G. has not seen a single case of cataract. Scrofula, and stone of the bladder are very uncommon, as are also croup and asthma.

Diseases of the skin are of very frequent occurrence among the Tartars, but Dr. Graperon has never observed lepra or elephantiasis. When the plague raged in 1812, our author visited a whole district, and found more than half the Tartar population affected with venereal eruptions. This disease makes great ravages, as the Tartars use no means to stop its progress. It communicates itself under this form only, without local symptoms. Mercury acts very efficiently in these cases, and our author recommends likewise sudorifics. The small pox is prevalent, particularly among the Tartars, as vaccination is little employed.

The fevers of the Crimea require no particular remarks. The tertian intermittents are occasionally very severe, and accompanied with great derangement of the digestive organs.

This paper concludes with some observations on the bite of the tarantula. Cases are given where it proved fatal—one in forty-eight hours, another in six days. The first case was that of a peasant, who was stung while sleeping in his hut by a large spotted spider. The sting was soon very painful; the neck swelled, and the respiration became difficult forty-four hours after the accident. Dr. G. saw him. On the right side of the neck, a brownish violet mark, as large as a lentil, was seen; the neck, head, and shoulder, were swelled; the thorax, from the clavicle to the false ribs, was of a blueish colour. Scarifications, the actual cautery, oil externally and internally, ammoniacum, were all tried in vain.

In none of these cases was there convulsive motions or a disposition to dance. On the contrary, the slightest motion induced a feeling of suffocation. We regret that no dissection of these cases was made.

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## QUARTERLY LIST OF NEW PUBLICATIONS.

### ANATOMY AND PHYSIOLOGY.

Geoffroy St. Hilaire, Philosophie Anatomique des organes respiratories. 8vo. Paris.

Grimaut, J. M. G. de, Traité complet de physiologie (ouvrage posthume). 2 tomes. Paris.

Heusinger, Ueber den Bau und die Verichtungen der Milz. Thionville.

Kératry, A. H., Inductions morals et physiologiques. Paris. 8vo.

Mekel, Deutsches Archiv für die Physiologie. 4 ter Band. Halle.

Mende, von der Bewegung der Stimritze beym Athemhohlen. Greiswald.

Nasse, Ueber das Verhaeltniss des Gehirns und Ruckenmarks zur Belebung des ubrigen Körpers. Halle.

Neumann, Von der Natur der Mensichen. 8vo. Berlin.

Schubart, De maxillae inferioris monstrosa parvitate et defectu. Cum tab. Frankfort.

Spurzheim, G., Observations sur la Phrænologie ou la connaissance de l'homme moral et intellectuel fondée sur les fonctions du systéme nerveux; avec frontispiece et six planches. 8vo. Paris et Strasbourg.

### BOTANY.

Flore du Dictionnaire des Sciences Medicales. Tome 4.

### CHEMISTRY, MATERIA MEDICA, AND PHARMACY.

Hurtado, Ratanhiawurzel, und ihre Wirkungen gegen Blutflüsse, aus dem Spanischen ubersetzt von Dr. Lebrecht.

### MEDICINE AND SURGERY.

Bartels, Lehrbuch der allgemeinen Pathologie. Breslau.

Bernstein, Handbuch für Wundaerzte. 2 ter Band. Leipzig.

Bigeon, L. C. Utilité de la Médecine. Paris.

Brachet, J. L. Essai sur l'hydrocéphalite. Paris.

Braun, Médico-Chirurg. Vade-Mecum. Heidelberg.

Brunard, Etienne, De l'Hygiène des Gens de lettres, ou Essai médico-philosophique sur les moyens les plus propres à devélloper ses Talens sans nuire à sa santé, Strasbourg et Paris.

Cailliot, Elemens de Pathologie générale et de Physiologie pathologique. 2 tomes in 8vo. Paris.

Conradi, Grundriss der Pathalogie und Therapie. Marburg.

Considerations sur l'etat actuel de la Médecine en France. 4to. Paris.

Dictionnaire des Sciences Médicales, tome 29. 8vo. Paris.

Dzondi, Kurze Geschichte des Klinischen Instituts für Chirurgie und Augenheilkunde auf der Univeritaet zu Halle, in Jahren 1811—17. Halle.

Galeni de optimo docendi genere libellus. Novæ Medicorum græcorum omnium Editionis Specimen exhibuit Dr. Kühn. Lipsiæ.

Geoffroy-Papin, (Pharmacien à Rochefort) Nouvelle méthode de guérir la maladie Syphilitique par des Végetaux indigènes. Paris.

Gordon's Knockenlehre verbessert von Rosenmueller, mit Kupf. Leipzig.

Graefe, Rhinoplastik, oder die Kunst den verlust der Nase organisch zu ersetzen. Dasselbe lateinisch. Berlin.

Kreisig, System der practischen Heilkunde. Leipzig.

Lagneau, L. F. Exposé des Symptomes de la maladie venérienne, &c. 5ième edit. Paris.

Landré Beauvais, A. G. Semiéotique, ou Traité des signes des Maladies. 3ième edition. 8vo. Paris.

Löbenstein, Lehre, Wesen, und Heilung der Epilepsie. Leipsig.

Malsch, de nova machina Græfiana, distortiones spinæ dorsi ad sanandas, nec non disquisitio deformitatum istarum. Cum tabulis. Berolini.

Moudat, V. Des Hydropisies en général et de leur cure. 2de edition. Paris.

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## NATURAL HISTORY.

Dictionnaire des Sciences Naturelles, tome 12. Paris.

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Klein, Lehrbuch zum Unterricht der Blinden. Wien.

Siemerling, merkwürdiger Fall einer vieljährigen von der Natur zwey mahl gehobenen Blindheit eines 92 jährigen Greises, und Vorschlag zu einer Künst. Pupillen Bildung. Berlin.

Soemmering, de Oculorum hominis animaliumque sectione horizontali. Commentatio. cum tabulis. Goettingen.

Walroth, Syntagmata de Opthalmologiâ Veterum. Halae.

## MEDICAL JURISPRUDENCE.

Anzeige der Rettingsmittel in allen Arten von Scheintod, oder Zufaellen welche mit grosser und schnelleintretender Lebensgefahr verbunden sind. Halberstadt.

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Hoffbauer, über die Gelüste besonders der Schwangeren, und ihren Einfluss auf die rechtliche Zurethnung. Halle.

Jörg's, Schriften zur Këntniss des Weibes und Kindes, und zur Bereicherung der Geburtshülfe, 2ter Baud. Leipzig.

Siebold, Ueber ein Kisten zur Erleichterung der Geburt und Geburthülfe: Berlin.

## VETERINARY MEDICINE.

Brosche, Handbuch der Zergliderungskunde des Pferdes. Wien.

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Kerstling, nachgelassene Manuscripte ueber die Pferdearzney-Wissenschaft. Braunschweig.

Mundigl, Ansichten ueber die Seuchen unserer Haustheiren.

Schwab, Entwurf einer allgem. Pathologie der Hausthiere. Wien.

## PERIODICAL.

Archir für den thierischen Magnetismus, herausgeben von Eschenmayer, Kieser und Nasse. 4ter Band. Halle.

Acta nova Societatis Havniensis, Vol. I. Havniæ.

Robert, Rapport sur les travaux de la Société académique de médecine de Marseille, pendant les années 1817—18. Marseille, 8vo.

Zeitschrift für physchiche Aertzte herausgeben von Nasse. 2ter Vierteljahre fur 1818. Leipzig.

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## NOTICE TO OUR READERS.

Our Readers will observe, that we have added eighteen pages to the present number, and have placed the Analecta on the smallest possible Type, that we might avoid the practice of dividing articles, and presenting them in an incomplete form.

THE

# QUARTERLY JOURNAL

OF

# FOREIGN MEDICINE AND SURGERY.

MAY, 1819.

## Art. I. *Biographical Account of Pierre-Hubert Nysten, M.D. late Lecturer on Materia Medica in Paris, &c. &c.*

Pierre-Hubert Nysten was born at Liège on the 30th of October, 1771. His parents were of but moderate circumstances. Destined to the bar, he pursued his first studies in the college of his native town, where he distinguished himself chiefly by his docility and application. Scarcely had he finished his studies in humanity, and fairly entered upon the preliminary exercises required for the profession of an advocate, when an irresistible inclination attracted him to the pursuit of medicine. Some books of anatomy had fallen into his hands, and every other kind of reading soon appeared to him to be without interest. Encouraged by his uncle in his new pursuits, he went to study medicine at Strasburg. After the death of his protector, he quitted that city, and in 1800 went to Paris. There, his activity and habits of reflection soon attracted the attention of his masters. It was at this time that he made his first galvanic experiments upon the excitability which subsists in different parts of the body after life has ceased. All his observations on this subject are collected in the Thesis which he defended on the 8th December 1802, entitled *Nouvelles expériences galvaniques faites sur les organes musculaires de l'homme et des animaux à sang rouge.* The title of Doctor was presented to him gratuitously.

For a long time he had engaged with ardour in the study of chemistry, and in 1805 he occupied the situation of assistant in the laboratory of the *Ecole de Médecine.* He also felt much interest in the study of materia medica, which he afterwards taught with distinction.

Being appointed in 1806, along with M. Bailly, to accompany Professors Desgenettes and Duméril into Spain, he hastened to partake the labours of those courageous and learned men, with whom he was taught to brave even death itself. This was not the only occasion on which he was exposed to such dangers. He was sent, in 1808, with M. Geoffroy, into several of the departments, through which the Spanish prisoners were passing, that he might aid in arresting the progress of the contagious diseases which the crowding together of these miserable individuals had produced. The Report upon this subject, inserted in the *Bulletin de la Faculté de Médecine* for March, 1809, proves that nothing was neglected in the exact observation of the effects of the epidemic, nor in the means employed to arrest its progress. Inspections of the dead bodies were constantly performed, unless peculiar circumstances rendered it impossible. The report not only affords lessons of great practical utility, but displays an example of that admirable courage which makes the physician forgetful of himself, in his attempts to relieve the sufferings of his fellow creatures.

Scarcely had M. Nysten returned from this mission, when, on the 18th May, he was appointed to render his assistance to the inhabitants of Joigny. The *Bulletin de la Faculté* for 1809, contain a letter from him on this subject; and he afterwards gave a circumstantial history of the disease, which he alone had combated with success. The same *Bulletin* contains the eulogiums addressed to him on this occasion, in the discourse which M. Desgenettes pronounced on the 9th of November, at the re-opening of the *Ecole de Médecine*. On his return, M. Nysten gave lessons in Materia Medica. We find him again, in 1812, with MM. Geursent and Savary, giving his professional assistance to the inhabitants of the Department of the Yonne, then suffering from typhus. Some time after, he provisionally occupied the place of physician at the Bicêtre, which was crowded with soldiers, labouring under the same disease.

In 1806, he published, first of all with M. Capuron, and afterwards alone, his *Dictionaire des Termes de Médecine*. Science and commerce were not less indebted to him than humanity; he was twice sent into the South of France, in order to investigate the causes, and arrest the progress of the mortality among silk worms, a subject upon which he published an excellent work, in 1808. Besides the Memoirs he furnished to different learned societies, he published the second edition of the *Matiére Medicale* of Schwilgué, in 1809. It was now that he undertook his experiments on the effects which are produced on the animal economy by different kinds of gas introduced into the

circulation; and in 1811, he published the most important of his works, his *Recherches de Physiologie et de Chimie Pathologiques*, which was intended by him, and has been judged worthy to be considered as a Continuation of Bichat's Treatise on Life and Death. Bichat had intended writing upon pathological physiology. Instead of giving a new edition of his Researches upon Life and Death, he meant to have introduced the first part of that work into a treatise upon physiology, and to have changed materially the second part. Bichat intended to make a new series of experiments with this view; and as M. Nysten had communicated to him the design which he had formed of undertaking some experiments upon the chemical phenomena of respiration, they purposed to have commenced their labours together, when the unexpected death of Bichat took place. The work of M. Nysten is divided into five sections. The first treats of the effects produced upon the animal economy by the presence of different kinds of gas in the circulating system. In the second, he examines the state of the chemical phenomena of respiration in diseases. The third has for its object the morbid alterations of the urine. In the fourth, the author considers the state of the vital properties after the extinction of the general life. In the fifth, he treats of the stiffness to which the body is subject some time after death. Every part of the work bespeaks a man of extensive knowledge, and possessed of the true spirit of observation. It displays great erudition and clearness in explanation, conjoined with a peculiar art in experimenting. The articles which M. Nysten furnished for the *Dictionaire des Sciences Médicales*, either alone or in concert with M. Hallé, are distinguished throughout by their precision and excellence.

Always pensive and absent, Nysten had a certain degree of originality about him, which even his intimate friends could scarcely describe. Incessantly buffeted by fortune, he in vain called all the resources of his mind into play—the blind goddess appeared obstinately to shun him. General esteem, the consideration of his masters, the sincere attachment of his friends, his colleagues, and his pupils, constituted all his wealth: but these were insufficient for the support of an affectionate wife, and two interesting daughters. The situation which he filled at the *Hospice des Enfans*, and his connections, which began to extend, promised speedily to remove the cares and disgusts which he had so often experienced, when apoplexy terminated his life on the 3d of March, 1818. He had for a long time felt himself threatened by that disease: his fears, grounded on the loss of several of his relations from the same cause, were

strengthened by precursory symptoms, such as giddiness, heaviness, and intense and habitual head-ache.

As a physician attached to the Dispensaries, he showed the greatest interest for the poor who claimed his assistance; and M. Guilbert has paid a just tribute to his memory at one of the meetings of the *Societé Philanthropique*. M. Esquirol had already performed this painful duty in the name of the *Faculté*. M. Hallé also has expressed his regret, in a notice prefixed to the third edition of the *Matière Medicale* of Schwilgué, which Nysten had again revised, to put it on a footing with the progress of science.

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Art. II. *Ueber den anstechenden Typhus, von J. V. Edler von Hildenbrand, K.K. Oest. wirkl. Regierungsrath, Director des Allgemeinen Krankenhauses, des Findelhauses, &c. &c. Zweyte Auflage.* Wien, 1815.

*On the Contagious Typhus, by J. V. von Hildenbrand, Director of the General Hospital, of the Orphan Hospital, and Professor of the Practice of Medicine in the University of Vienna.* 2d Edit. Vienna, 1815.—pp. 298.

The term Typhus is derived from τύφος stupor; and the expression τυφώδης πυρετὸς (febris typhodes) was employed by the earlier Greeks simply to signify fever having stupor for a prominent symptom. Hippocrates uses it in this sense, and although it happens that in his unauthentic writings five different fevers are denominated typhus, this merely shews that the term was used, not to characterise one individual disease, but to denote a common symptom. Galen, however, was not satisfied with the word τύφος for expressing the affection of the head in typhus fever, and where he describes that symptom, he uses the term τυφωμανιη, meaning stupor and delirium conjoined. But along with this he had a theory which supposed the bile, liver, and phlegm to have particular influence in producing these fevers, and disregarding the etymology of the word he arbitrarily defined febris typhodes, "febris continua et ardens a jecinoris erysipelate excitata." Owing to this theory and definition, the empirical view of the disease was abandoned after the time of Galen; the characteristic symptom, the stupor, was left entirely unnoticed; and nothing but the liver and bile were thought of. Thus it was with the Arabians, of whom Avicenna alone mentions the characteristic typhomania, under the name of Sahara Subeth. By the accurate observers of the sixteenth cen-

tury, this view of the disease was carried still further; for Petrus Forestus, in describing a case of inflammation and suppuration of the liver, calls it typhus fever. By the humoral pathologists of the last two centuries the use of the word was entirely abandoned, and they denominated typhus fever according to the predominating state of the fluids—foul, petechial, or bilious fever.

Sauvages, having seen a typhus epidemic in 1761, seized the essential characters of the disease, and by his admirable description of it, again established the distinct nature of typhus. By the nervous pathologists, it was included under what they termed nervous fever; the febris lenta nervosa, so accurately described by Huxham, was nothing but typhus. Cullen, in his Nosology, copied the definition of typhus from Sauvages, but by afterwards adding, that he considered synochus to be only a variety of typhus, this great nosologist made far too unlimited a use of the term, or rather said nothing precise on the subject. Influenced by his example, most moderns have employed the word typhus to denote that fever, and sometimes only that stage of fever in which nervous symptoms predominate.

From all this it is evident, that the meaning of the original word typhus has been disregarded, that the peculiar characteristic of typhus fever, the stupor, has been lost sight of; and the individual nature of the disease not having been considered, the logical error of including all nervous fevers under the generic name of typhus, instead of reducing typhus as a species to nervous fever as a genus, has been committed. From this latter mistake have arisen frequent disputes on the contagious, or non-contagious nature of typhus. The supporters of each opinion have referred to experience, and both may have been right; the word typhus, nervous, asthenic and putrid fevers being used so indiscriminately, that many seem not to have known what kind of a disease they would thereby specify, and actual typhus has frequently been mistaken for another fever, and another fever for typhus.

It is the *contagious typhus* only which is the subject of the treatise before us, and it has been so called in order to prevent any misunderstanding on its contagious nature, while the word typhus has been preferred, as being the original Greek word, expressing the most invariable phenomenon of the disease.

This contagious typhus is a distinct febrile disease—a disease of a peculiar kind, like the small-pox—a disease which has a constant uniformity in its essential symptoms—which, from a determinate cutaneous eruption, belongs to the class of exanthemata—the course of which is divided into distinct stages, wherein its character undergoes regular determinate changes—the only constant symptom of which in every stage is stupor

with delirium, or typhomania, accompanied, as Galen justly observed, with a more or less evident affection of the liver—a disease, which of itself is neither an inflammatory, nervous, nor putrid fever, but which has been observed to assume all these characters. The difference between typhus and the real nervous fever consists in the latter not being contagious; and although accompanied with nervous symptoms, it does not exhibit that peculiar affection of the nervous system which takes place in typhus only, viz. the stupor. As for putrid fever, putridity as well as malignancy, is merely a symptomatic character, depends on accidental circumstances, and may be superadded to any species of fever. Finally, typhus differs from all other fevers which have any similarity to it, by certain essential symptoms, and by a peculiar determinate course.

From the writings of Hippocrates, and particularly from the description of a disease in his Treatise de Morbis Populari lib. ii. et iii., it is evident that contagious typhus, with all its essential symptoms, existed at his time; and if the causes of the disease be considered, it can scarcely be doubted that it is as old as the human race, or at least as the social habits of mankind. Being contagious, it might exist for ages, appearing sometimes as a sporadic, sometimes as an endemic, sometimes as an epidemic disease, receiving a different name, as the ideas of the age varied on its nature. Many of the diseases mentioned in history, under the name of plagues, were nothing but common contagious typhus, such was that of Athens, described by Thucydides; and in more modern times, that which in 1528, raged over all Italy; that of Hungary, in 1566, which spread over a great part of Europe, under the name of febris Hungarica, or Pannonica; and many others. The disease has always been, and always will be, the steady associate of warfare. It is this fever which Diodorus, the historian, describes so accurately, as it raged among the Carthagenian troops at the siege of Syracuse; and without referring to intervening periods, the prodigious havoc occasioned by this disease during the numerous wars since the French Revolution, is fresh in the recollection of every one. In the campaign of 1813-14, not a province from Russia to Spain and Italy, but suffered from it; while it raged particularly in the environs of the besieged and blockaded fortresses, and of the great fields of battle in Russia, Saxony, and Bohemia.

In order to describe typhus accurately, the disease must be distinguished into that which is communicated, and that which is generated: the first arises from the reception of a peculiar infectious matter; the last is developed under certain favourable circumstances during the course of some other febrile dis-

ease, and though not arising from contagion, being once formed, is contagious. Further, typhus must be divided into the regular and anomalous; for although it has a natural course, like other exanthematous fevers, this is sometimes disturbed by the effect of accidental circumstances.

Ere it terminates in the recovery of perfect health, regular communicated typhus passes through eight stages.

*The first, or stage of Infection,* is probably but of a few seconds duration, during which the morbid poison penetrates into the system of the individual. This is not accompanied by any symptom indicating its taking place, and those who have pretended to determine the precise period of infection, by any particular sensation, have been deceived by the effects of imagination or of apprehension.

In *the second stage,* or *that of Opportunity,* precursory symptoms of indisposition are observed, but these have nothing characteristic, being merely such as occur at the beginning of all febrile diseases, viz. langour, disinclination for exertion, giddiness, &c. The limits of this stage are not easily fixed, but from numerous observations, it seems never to last less than three, and never more than seven days.

In *the third stage, or that of Invasion,* the actual febrile paroxysm begins. A creeping sensation over the head and back is first felt, and then the decided shivering takes place, accompanied with the other concomitants, paleness of the surface, cutis anserina, rigors, intervening flushes of heat, &c. After this period the fever cannot be put back, but the only exit is by a crisis. The length of this stage rarely exceeds twelve hours.

*The fourth, or Inflammatory stage* next sets in. It might also be named the stadium inflammatorio-catarrhosum, or exanthematic, but the appellation inflammatory has been preferred, as this stage invariably presents that character. The frequent full strong pulse, sometimes oppressed, but never actually weak; the universal turgor and redness, &c. are all symptoms which accompany inflammation: and in this stage of typhus, there is the strictest analogy to what occurs at the beginning of all infectious fevers, as small pox, measles, scarlatina, and even the plague itself. In addition to these proofs of its inflammatory character, it may be added, that the treatment found most successful in this stage is the antiphlogistic. But, as in other exanthematous fevers, this inflammatory character is always complicated with catarrhal or gastric affections, which occasionally are even so predominant as to obscure the diagnosis.

With the increased heat which succeeds the first febrile paroxysm, this fourth stage begins. On the first day of this stage,

the patient complains of uncommon weight in the head, with an oppressive sense of giddiness rather than of pain; there is nausea and frequent vomiting, which, as they occur with a clean tongue, are probably dependant on the giddiness; and the other symptoms are those of common inflammatory fever—the face full and red; the tongue white rather than furred; the urine scanty and high coloured; the pulse frequent and full, not quick, never quite free, and generally oppressed.

On the second day, after a sleepless, restless night, the heat increases, whilst the vomiting, and sometimes the nausea, disappear. The weight in the head changes to stupor; the giddiness also increases, and the upright posture can no longer be borne, without a feeling of sinking. Sometimes tinnitus aurium is already felt. The catarrhal affection which began to show itself on the preceding day is now more advanced, the eyes are red, and the mucous membrane of the nose and fauces becomes tumid; there is a slight difficulty in swallowing, some tightness of the chest, and frequently cough: both hypochondria feel tense and painful, but particularly the left, whilst every other febrile symptom is aggravated. In addition to these, one of the most essential and characteristic phenomena is, the patient's unconquerable disinclination to exertion; hence the tardy answers, the perhaps total silence concerning his complaint, and the slowness in protruding the tongue. These symptoms continue without intermission during the third day also, at the end of which some slight precrises usually occur. On the fourth an epistaxis in moderate quantity generally takes place, always accompanied with temporary alleviation of the affection of the head. The whole surface of the body now becomes unusually turgid, and the eruption appears. This consists of a red spotted efflorescence, having a great resemblance to the mottled appearance which the skin of a healthy person presents when exposed to a slight degree of cold. Among the spots are interspersed small papulæ, not so prominent as those of the miliary eruption, but rather like those of measles; to which indeed the whole typhus eruption has a great likeness, but from which it is distinguished by the total absence of burning and itching, and by its paler colour. With this, miliaria and petechiæ (parasitic eruptions as it were, dependant on accidental causes) are frequently conjoined.

These symptoms continue unchanged during the fifth, sixth, and seventh days, except that the catarrhal symptoms cease when the eruption has appeared. On the seventh day there takes place a very evident exacerbation, and this, with that at the end of the fourth, are the only two which occur during the course of

the inflammatory stage. With the close of the seventh day, the exacerbation having been succeeded by a remission, which frequently lasts but a few hours, a new stage opens.

*The fifth, or Nervous stage,* begins with the eighth day of the fever. The heat of the surface is remarkably increased, and to the hand the skin communicates a burning, glowing sensation ; but the turgor disappears, and so do the cutaneous eruptions, the petechiæ excepted. The epidermis becomes dry, shrivelled, and brittle. The tongue is parched and shrunk, the thirst is greatly increased, but the patient's torpor and indifference do not allow him to ask for drink. Swallowing is impeded, partly from the dry state of the mucous membrane of the fauces. The catarrhal affection having ceased, the tightness of the chest goes off, the breathing is more free, but quick ; the cough also ceases, but is frequently replaced by singultus, an affection seldom awanting in this stage of typhus. The changes in the state of the bowels are remarkable; they, in place of the skin, seem now to be in a state of activity, for there always occurs a tendency to repeated loose stools, of excessive fœtor. This is accompanied with slight pains in the abdomen, dependant on partial inflammation of the bowels, traces of which are always found on dissection; and to this, rather than to impurities in the intestinal canal, is to be attributed the meteorismus which is present. The pulse is variable, but it is never so permanently weak and tremulous as in cases of real debility; on the contrary, it is in general pretty strong, full, and free; not frequent, and never small and soft. Still the pulse has a peculiarity not easily described; the strength of the arterial oscillations varies at different times, the vessel has frequently a very imperfect contraction, seeming rather to be in a state of constant expansion.

By far the most important symptoms of this stage are those constituting what is termed the status nervosus. It is an invariable and essential character of typhus, that the sensorium suffers in a peculiar manner : in the preceding stage this chiefly appeared in the impaired state of the functions of the external senses, in the confusion of the ideas from stupor, in sleepless restlessness, and in some slight involuntary motions; in the present stage all these are aggravated, and present new modifications. The muscular powers are interrupted, apparently from great debility, but really from unconquerable torpor, resembling that which arises from intoxication; but with this, the involuntary motions increase, hence tremors, subsultus tendinum, slight convulsions, and various spasmodic affections, in particular of the muscles of the throat, and urinary bladder. The

deafness increases, vision is impaired, and smell, and taste, are almost entirely lost. Whilst the communication with the external world is thus limited, the impressions arising from within seem to be more vivid and strong; the patient dreams without being asleep (typhomania), and talks deliriously; being either solely occupied with his internal impressions, and totally disregarding external objects, or confounding together his external and internal perceptions. It is also remarkable that one single predominant impression or idea usually torments the patient during the whole course of the fever. In his own case, Hildenbrand was for seven days occupied with remedying the mal-position of the stove in his own room, his inability to accomplish this occasioning him the greatest distress. On recovery, there is very rarely the smallest recollection of this one overpowering idea, or indeed of any thing else that took place during the nervous stage; which is the more remarkable, as the patient often reasons as if he were perfectly conscious, or as if he had very lucid intervals. The whole of this state bears a strong resemblance to somnambulism. In the insensibility towards external objects, instinct itself is involved; for in regard to appetites and desires, there prevails the most listless indifference; the patient asks for nothing, because he wishes nothing; he declines nothing, because he almost feels nothing; he does not even wish for health, and always replies that he is very well. This stupor, which in various degrees is the principal and constant symptom in all the stages of this disease, is so characteristic, that along with the supine position, it indicates at once the patient's complaint.

Such are the symptoms of this stage, or at least during the eighth, ninth, and tenth days; at the end of which last, however, a stronger exacerbation than the usual evening one takes place, lasts for a few hours, and a gentle perspiration or some evacuations by stool or urine taking place, this is succeeded by an evident remission. This remission is most considerable on the eleventh day, but on the twelfth and thirteenth it is again supplanted by increased febrile heat and aggravated affection of the nervous system.

*Sixth stage, or that of the Crisis.*—The fever having remained at a certain height during the preceding stage, a change now takes place, and without the assistance of art the fever suddenly abates. At the end of the thirteenth day, a more severe exacerbation than any former one takes place, the heat is more glowing, the arteries pulsate more strongly, the brain is more affected, and a state of sopor occurs. Generally in twelve hours from the com-

mencement of the exacerbation, and on the fourteenth day, the parched skin shews a tendency to perspiration, the external apertures of the body seem to open and to be freed from spasm, and the decisive moment arrives. In some, another epistaxis appears, never copious, but always with relief to the head ; at any rate the nostrils now become moist, and pieces of dried mucus besmeared with blood are discharged, accompanied with sneezing. The tongue towards the point gets moist, clean, and red. Many expectorate copiously, if the breast was previously much affected. In all cases the skin becomes bedewed with a gentle perspiration, which usually ends in a copious universal sweat ; which, if not the cause, is always the concomitant of an alleviation of all the symptoms. When really critical and salutary, it is uniform and not clammy, though in some places, as on the forehead, it collects in drops ; it has also a peculiar smell ; and is most beneficial when it occurs during sleep. Next to this evacuation, those by stool produce the greatest benefit, and it is not requisite for this that there should be a diarrhœa, for frequently the same effect is derived from a few loose stools, copious and offensive. The critical discharge of urine in this disease merits little attention ; at this time, however, it is generally more plentiful, high coloured, muddy, frequently depositing a copious sediment.

*Seventh stage, or that of Abatement.*—The foregoing stage, or crisis, lasts but a few hours, and generally in twelve more, the new stage has commenced. The patient now seems as if he had awoke from a dream, or a state of intoxication : the delirium is gone, the head is clear, and in many the almost instantaneous recovery of complete consciousness takes place ; the listless indifference has ceased ; external objects, and his own situation, begin to interest the patient ; the eye and the whole expression of countenance are more lively ; and with the exception of hearing, the external senses have resumed their functions. The pulse is quiet, equal, and free, though weaker than natural ; respiration and the heat of the body are uniform and moderate ; the thirst has ceased ; and the appetite begins to shew itself.

The symptoms which remain, are a feeling of langour and debility, soreness of the whole body, and fatigue on the least exertion ; a pale and hollow countenance ; a degree of giddiness, with a peculiar disagreeable feeling about the head ; deafness, and tinnitus aurium ; drowsiness, or a frequent inclination for sleep ; whitish tongue ; unnatural taste in the mouth ; a tendency to perspire, with acceleration of the pulse, from slight irritation or exertion.

This stage usually continues for seven days after the crisis, the symptoms gradually disappearing, the tinnitus aurium, however, last of all.

*Eighth stage, or that of Convalescence.*—The morbid appearances of the previous disease have now disappeared; but health is not perfectly restored, general symptoms of indisposition still remaining; the muscular motions are not yet steady and well directed; the flesh is loose and the skin folded. The epidermis falls off in scales; the hair also is renewed; the desires are not only restored, but greater than natural; the appetite is craving, and the sexual passion strong. Even common impressions on the external senses communicate a great degree of pleasure. The excretions are still irregular, the bowels confined, and the menses suppressed; it is only when the body is completely renourished that these evacuations become regular. Complete recovery, in many cases, requires some weeks: but then the patient frequently enjoys a state of health which he never knew before.

In the ordinary and regular course of typhus, the appearances present themselves as have been now described; but in this fever, as in small-pox, measles, scarlatina, &c. variations from the natural type are liable to occur both in the symptoms and course. In different individuals the effects of even the identical infectious matter may be modified by various circumstances. Those which have most influence are the following: 1. The patient's previous disposition, whether he be young or old, of a full or spare habit, disposed to some local affection, or already affected with other diseases. 2. The prevailing epidemic character, whether this be inflammatory, bilious, or tending to intermittent fever, which has sometimes so much influence on the form of typhus, that its features are either not to be traced, or, on the contrary, they are excessively heightened in some of the stages. 3d. The particular unfavourable circumstanees to which the patient is exposed, including those of living, diet, treatment, &c.

The anomalous appearances which occur during the first stages are few: on the invasion, the shivering may be so slight as scarcely to be observed, the fever seeming to begin at once with increased heat, or the rigors may last or return at intervals during some days.

In the fourth stage, they are numerous and striking. The inflammatory character of this stage is frequently greatly increased, sometimes with a greater violence of the general symptoms merely, but at others with severe local inflammation. When the head is the seat of the latter, for delirium we have absolute phrenzy,

and instead of stupor apoplectic sopor; pneumonia, with all its severe symptoms, very often takes place; and inflammations of the liver and intestines are not of very rare occurrence. In all of these cases the disease may be easily mistaken, but by recollecting that previously to the symptoms of local affection taking place, others of general fever were present, and that stupor, tinnitus aurium, and a peculiar eruption are present, we are generally able to distinguish that the local affection is not the primary disease.

Continued nausea, repeated vomiting, foul tongue, bitter taste in the mouth, weight at the pit of the stomach, fullness of the abdomen, gripes, and fetid stools, occasionally give to typhus the appearance of bilious fever. In some cases the eruption does not appear, or it is only on the closest examination that it can be discovered.

The nervous character may begin to shew itself during this stage, of course prematurely, and rather from a diminution of the inflammatory symptoms. Premature typhomania, subsultus tendinum, &c. occur. Occasionally such a degree of debility and sinking of the vital powers already takes place, that the disease would by some be called malignant; and lastly, now and then symptoms of a putrid character appear during this stage. Sometimes instead of the nervous character shewing itself too soon, the inflammatory continues to the ninth, or even to the eleventh day of the fever.

In the Nervous stage, the anomalous appearances are fully as numerous as in the preceding. Besides the general inflammatory character, the local affections of that kind may continue for a few days. Sometimes, without any part having been previously individually affected, local inflammation of a spurious kind occurs, which, if seated in the large intestines, is apt to produce dysenteric typhus.

Lumbrici are frequently discharged in this stage. Diarrhœa, with frequent fetid stools, which is often met with, is not to be attributed to debility, but rather to the bowels being now in a state of activity, in place of the skin, and to the unhealthy bile secreted by the liver in a state of irritation. Often the petechiæ still continue, or they may increase; and sometimes they now, for the first time, appear. The last may be the case with the miliary eruptions also, and even with the true typhus eruption.

But the principal variations from the natural type of this stage occur in the symptoms of the nervous affection. These and the debility are frequently much increased. The tongue is shrunk like a piece of burnt leather, the heat is excessive,

with a tendency to extremely debilitating diarrhœa, great meteorismus, violent pains in the bowels, muscæ volitantes, picking of the bed clothes, muttering delirium, various spasmodic affections, paralysis of the eyelids, tongue, &c.; and in several cases Hildenbrand has observed a peculiar cramp of the fingers, stiffness of the muscles of the extremities, a real trismus, horror at liquids, and other hydrophobic symptoms. Sometimes symptoms of a putrid character appear—black coating of the tongue and teeth; fœtor of the breath, stools, and indeed of almost the whole body; bluish colour of the skin, ecchymosis, carbuncles, &c. Such cases of typhus rarely terminate on the fourteenth day. If death has not previously occurred, they run on to the seventeenth, twenty-eighth, and even to the thirty-fourth; but in the latter case always end fatally.

With respect to the crisis, it sometimes happens that the usual precrisis on the seventh day does not take place, or is attended with a scarcely perceptible alleviation; and sometimes it is followed by an aggravation of the symptoms. Should the second or decisive crisis not take place on the fourteenth day, it rarely happens until the end of seven days more, viz. on the twenty-first; for that between the eighteenth and nineteenth is seldom effective. In the same way, should it be further protracted, the twenty-eighth or thirty-fifth is the day on which it takes place, although this is of rare occurrence. It may be remarked that the favourable crises are much more precise in their periods of occurrence, than the unfavourable. When death happens, the fatal crisis is either premature or procrastinated. The symptoms also which accompany the crisis admit of variation; the changes in the urine are not worth reckoning; the discharges by stool sometimes indicate no critical evacuation; and in some rare instances the critical sweat is wanting, the skin remaining dry, and yet the patient beginning to recover. With respect to the consequences of the crisis, whenever this is followed by death, it is an anomaly; for, like that of small-pox and measles, the poison of typhus is so constituted as to be easily subdued by the vital powers, when no particular impediment occurs; and far more recover of the disease than sink under it.

The abatement of the disease is sometimes lengthened, but it is never shortened; and it may be accompanied with unusual symptoms, such as a continuation of the stupor, repeated short attacks of delirium, or lingering affections of the thorax or abdomen. New morbid appearances take place only when typhus terminates in another disease, and they are principally those of a fatal metastasis. Cases, however, do occur of the

patient in this stage, by means of a fresh infection, relapsing into the same disease.

During the convalescence, the tremors may be long in ceasing, the night passed without sleep, the appetite may not increase, the patient only be able to walk when supported by others; he is peevish, and does not enjoy the pleasures of recovery, although the disease has ceased. These only occur when there has been some irregularity in the preceding stages; but sometimes, when the course of the disease has been regular and slight, convalescence is retarded by depressing passions.

Hitherto the aggravating anomalous appearances only have been noticed; but, in opposition to these, cases occur where the disease is so slight that the patient scarcely lies a bed; a trifling degree of stupor for fourteen days, with slight pains in the bowels, forming the whole complaint. In some cases of this kind, the decisive crisis occurs so early as on the eleventh, or even on the ninth day of the fever.

The cause of this disease is implied in its name of contagious typhus; it is the effect of a morbific poison, which, like other infectious miasmata, occasions a peculiar fever, and during this, the poison is generated anew.

The new miasma does not seem developed until the appearance of the eruption, and is in the most active state during the permanent dryness of the skin in the nervous stage of the disease. It is communicated directly, or indirectly:—directly, by actual contact, or by merely approaching the person, so that it is both contagious and infectious; indirectly, by means of a third substance, which, being near a person affected, absorbs the poison, and then gives it out again. It would appear that these intervening bodies cannot retain the miasma longer than three months, or that the poison itself cannot exist beyond that period without being decomposed.

The manner in which infection takes place is unknown; it is probable that the skin is the part at first principally affected, although we are not able to say what the changes are which it undergoes. Some circumstances are known to influence the process; young and middle aged individuals are most liable to infection, whilst infants and children are very rarely affected, even when their mothers and nurses are suffering from the disease. Old decrepid people seem incapable of receiving the infection. Sex occasions little difference in the comparative liability, but perhaps women are most liable. Men of delicate habits, who observe a strict and sparing diet, who are of a melancholy disposition, or who

dread infection, are more frequently attacked; while those who indulge in wine, spirituous liquors, or tobacco, and men who are of social habits and lively disposition, are less so. Individuals suffering from the effects of other fevers, whether contagious or not, are very liable to the infection of typhus, while chronic diseases seem a sort of preventative; in many hundred cases of typhus, which Hildenbrand has treated, he never saw a consumptive patient have the disease. Lastly, some individuals seem perfectly insensible to infection. When the disease has occurred once, this serves as a preventative against fresh infection, if not for ever, at least for many years, although to this, exceptions now and then occur.

The opinions regarding the proximate cause of typhus are innumerable. That of Marcus, which makes it inflammation of the brain, is erroneous, and merely substitutes a part for the whole; for the cause might with equal justice be said to be an inflammation of the intestines, as every case of the disease is accompanied with an inflammatory affection of these parts. The proximate cause of the disease certainly consists in an inflammatory state, (not actual inflammation) of the secreting membranes of the body, which extends to the nerves and sensorium. To these membranes belong the rete Malpighi, the lining membrane of the cavities of the nose, mouth and throat, the tunica arachnoidea, and the mucous membranes of the trachea, bronchiæ, stomach, intestines, and organs of urine and generation.

The affection of the rete Malpighi is shewn by the changes which occur in the skin, and by the more or less evident, yet invariably present eruption: that of the mucous membranes of the eyes, nose and throat, is equally manifest; and the cough, and tightness of the chest, as distinctly testify that of the respiratory organs. The state of the secreting membrane of the brain is seen on dissection; in every case of typhus proving fatal, the tunica arachnoidea is found thickened, interwoven with fine red vessels, and between it and the pia mater, a morbid collection of serum is present, whilst the adjoining parts both of the dura mater and cortical substance of the brain, are loaded with blood; to these, the affection of the head and nervous system during life, but particularly the never-varying stupor, are readily referred. With respect to the intestines, their coats are always found thickened, and covered with red vessels, and from this the pains in the abdomen and its tension proceed; but the catarrhal affection of the same parts is most distinctly exemplified in the peculiar blennorhœa intestinorum which so often occurs in typhus. And lastly, although the mucous membranes

of the organs of urine and generation are those of least consequence in the system, they are not free from irritation; and hence the affections of the urethra and neck of the bladder in men, and the discharge from the vagina in women.

From this state of the whole secreting membranes, which, though not actual inflammation, very nearly approaches it, the principal morbid symptoms are derived. To this succeeds an affection of the nerves and sensorium, and although the transference of the affection of the secreting membranes to the nerves is actually indicated by the symptoms, our knowledge of the physiological connection between these parts is too imperfect, to enable us to say what is the nature of the morbid process produced in the system.

Before proceeding to consider the treatment of this disease, it is necessary to examine its different terminations a little more closely, in regard to the manner and circumstances under which these occur. The changes which accompany this disease when it terminates in recovery, have been already described. When the patient's constitution was previously good—when he has not been debilitated by preceding diseases—when there is no morbid disposition in any individual organ—when the typhus is simple, its course regular, the symptoms moderate, and merely such as are characteristic—typhus readily ends in the complete restoration of health. But it is Nature alone who effects this; for no method has been discovered of curing the disease, nay, not even of shortening its usual and regular course of fourteen days. The case is here the same as with small-pox, measles, &c. In all these instances, we are equally ignorant of the process by which recovery is effected; but in typhus, that there is an intimate connection between it and the crisis is certain, the nature of which connection, however, is inexplicable.

When typhus ends in death, various circumstances may have contributed to this unfavourable termination. The patient's constitution may have been previously bad, or his strength reduced; he may have laboured under other diseases, or have had a tendency to some local organic affection; the fever itself may have been of unusual violence, its symptoms aggravated, and course perverted, so that under the interruption of the important functions of entire systems, or individual organs, life could no longer subsist. Death in typhus, usually arises from debility, or apoplexy. Death from the first cause has been generally supposed to be the more frequent, but this is a mistake. The appearances which accompany this termination of typhus, possess nothing peculiar, excepting that generally just before death the stupor and delirium cease, and the patient recovers his consciousness. It

may also be said, that those who die with putrid symptoms, die chiefly from debility. Of the apoplectic death there are two kinds, the humoral, and the nervous.

The humoral occurs in typhus, first by *inflammation of the brain or its membranes.* This often occurs during the inflammatory stage of typhus, and death takes place in the earlier days of the disease, under symptoms of an irritated or inflammatory state of the brain, terminating in a manner quite similar to plethoric apoplexy. On dissection, the blood-vessels of the brain and its membranes are found to be gorged, accompanied sometimes by extravasations. Secondly, by *simple, not inflammatory congestion* of the head. The symptoms immediately before death, and the appearances on dissection, are nearly similar to those in the preceding case; but this kind of death may also take place during the latter days of the disease. Thirdly, by *Metastasis* to the brain. In this case the affection of the head having been previously slight, the apoplectic state usually occurs suddenly after a critical exacerbation, and the patient usually dies on a critical day. The brain shews inconsiderable turgescence without extravasation. Fourthly, by *suppuration of the brain.* The symptoms do not serve to distinguish this case from the preceding; perhaps an œdematous appearance of the head and face is the only external sign of this state. Death often takes place very late, and on uncertain days. Abscesses of the brain, or ulcerations of its membranes, are found on dissection, and although cases of this kind are not very rare, the first time our author met with such a case, he thought he had mistaken the disease; but he afterwards met with four cases, where, previous to the typhus, all the individuals were certainly perfectly healthy, and in whom, of course, the suppuration must have taken place during the typhus. Fifthly, by *a collection of serous fluid in the cavities of the brain,* hydrops acutus, which is frequently met with in subjects dying from typhus. To this also belongs the effusion of lymph between the membranes.

The nervous apoplexy is, without doubt, the most frequent cause of death in typhus. There is no pressure on the brain in this case. Death takes place suddenly, having been preceded by the symptoms of the status nervosus. As it usually happens on critical days, it probably arises from the exacerbation which then occurs wholly exhausting the vital powers, and thereby suddenly unhinging the nervous system. No morbid appearances are found on dissection. This kind of death only occurs in the latter days of typhus, and it differs but little from that by debility, excepting that in the first, death occurs suddenly; in the last, slowly and gradually.

Typhus sometimes terminates in producing other diseases, the most common of which are various chronic affections of the viscera of the head, chest, and abdomen; and swellings of different glands, as the parotids and maxillary. Occasionally the local inflammations which occur previous to the crisis, end in suppuration, which does not prove quickly fatal; and this happens as well in the brain and lungs, as in the viscera of the abdomen, where the liver and intestines are its most frequent seat. Gangrene of the external parts often takes place, occasioning tedious sores. Hildenbrand has repeatedly seen gangrene of the nose, but it never proved fatal; he has also several times, particularly in the epidemic of 1806, at Cracow, had cases of dry gangrene, both of the hands and feet, from typhus. A beggar, who had dry gangrene of the feet, for a long time traversed the villages in a cart, and collected a great deal of money, until he was laid hold of by the police, and sent to the hospital, where the gangrenous parts were removed almost like a boot, and the bones which remained were sawn off.

A sure and *rational* prognosis in typhus, consisting in the foretelling which of the above terminations is presumptively, probably, or certainly to take place, must be founded on a just estimation of the various circumstances which have been already described. But besides these, there are other symptoms which admit of no reasoning or explanation, which are frequently even more to be depended upon. Those empirical signs, which lead us to expect a favourable termination, are the following:—a spontaneous vomiting, with alleviation of the giddiness, in the first days of the disease—an epistaxis on the fifth or seventh day—greater mental serenity and less affection of the memory in the morning—slightness of the peripneumonic attack in the first stage—moderate spontaneous diarrhœa at an early period. Deafness, although usually reckoned a favourable symptom, Hildenbrand places no reliance upon. Moderate and quenchable thirst, particularly in the nervous stage, is a very favourable sign; for thirst being invariably present in fever, its not being expressed, indicates a considerable affection of the sensorium. A moist tongue in the stage just mentioned, though rare, is a good symptom; as also the pulse being free, and not frequent. The most favourable symptom of all, is the affection of the nervous system being moderate.

The empirical signs of an unfavourable termination are:—no relief succeeding the first emetic, or spontaneous vomiting—great alteration of the features at the very beginning of the disease—no thirst whatever—unremitting violent delirium—

the early eruption of petechiæ—continuation of the pneumonic symptoms in the nervous stage—early swelling of the parotids. But the worst symptoms of all in the nervous stage, are blindness—involuntary weeping—impeded deglutition—paralysis of the tongue—unceasing low murmuring—dead weight of the head—the patient's utter neglect of himself—long continuing petechiæ—peculiarly confused and very frequent pulse—writhing of the features upon pressure of the abdomen—great meteorismus—unceasing motions of the hands—and permanent colliquative diarrhœa. The pulse and urine admit of least dependance in this disease; the first may be almost natural, and the patient die. Affections of the abdominal viscera, particularly of the liver, if not removed at the beginning of the disease, greatly aggravate it; and so do syphillitic affections even when local. Dropsical people, on the contrary, bear the disease well.

The treatment of typhus in its regular course is now to be considered; and here, as in every disease of which we have no complete theory, we possess no rational or direct cure; and the only treatment must be founded on hypothesis or empiricism.

"Every plan of cure proceeding from hypothesis is fluctuant, to the practical man unsatisfactory, and to be avoided also from its uncertainty; to the pure theorist it can have only a very relative value, and it can satisfy those merely, who with haughty pretensions possess an insane love for their hypothesis, and either do not observe, or cannot estimate, the effects of the treatment they employ.

"With how little honour these theoretical champions have hitherto engaged against real and substantial causes of disease, or rather how laughably they have fought with phantoms and shadows, is evident in part from the consequences of their fruitless exertions against the unconquered and immoveable enemy, and by the ridiculous attitudes they still hold on the field of battle, whilst with the change of years their chimeras have dispersed like smoke, to make room for others equally senseless."

"When all these hypothetical plans of treatment are calmly viewed, the transientness of their duration, the perishableness of their value, and the insufficiency of their application in practice, are at once perceived. But when, on the contrary, we pursue the road of observation and safe analogical experiment, that is, the road of empiricism guided by reason, then to a free and unfettered vision, new and better prospects arise than those seen through the eyes of hypothesis."

"We first find, that in simple ordinary typhus the vital powers of themselves are sufficient to effect the most perfect recovery, and that this happens only after a certain period of time, and after precise changes in the system; and then, that this disease has a course so determinate that no method has hitherto been discovered by which it can be success-

fully shortened, much less cured; that death alone can shorten it, or that interrupted typhus produces death.

"Things then being thus constituted, nothing remains for the practical man but to adopt the indirect method of cure, to await the operations of nature by which this cure is effected, to support her in these, to set aside all impediments in order that the vital powers may exert their beneficial influence in a free and undisturbed manner, until the disease be surmounted, and the contagious process completely terminated; in short, to obviate all complications, to remove or alleviate all dangerous individual symptoms, that every preparation be made for a favourable crisis."

So long as the decisive shivering has not begun, Hildenbrand has reason to believe that the process and whole future fever may be successfully checked by the application of cold, by the use of the cold bath, or of repeated washing of the body with cold water, or by rubbing it with snow. As for the use of emetics and blisters for this purpose, he cannot speak from experience.

In the third stage, or Invasion, the chief characteristic of which is the shivering, it is a great practical rule to do nothing of consequence or decisive. The disease has now fairly begun, and it is impossible to stop it. It would be premature to bleed for oppression at the precordia, to give an emetic on account of spontaneous vomiting, or to use any other debilitating or irritating remedies, whilst the patient is affected with rigors. The best treatment is to give tepid diluents, and to preserve a moderate warmth in bed.

In the fourth, or Inflammatory stage, on the proper management of which much of the subsequent fever depends, the indirect plan of cure consists in moderating dangerous symptoms, and in combating the now predominant inflammatory-catarrhal character, having at the same time regard to the disturbed action of the skin.

That spontaneous vomiting, or vomiting produced by the employment of emetics, is of great advantage at the beginning of typhus, is sufficiently proved by experience. It may be asserted, and its truth is supported by numerous observations, that an emetic at the beginning gives a favourable character to the whole course of typhus; that many anomalous symptoms are thereby prevented, the nervous stage mitigated in violence, and the body prepared for the most favourable crisis. Indeed, it is in cases where this remedy has been given, that patients often get out of bed during the last stages, or that the disease seems to terminate on the eleventh day, from the symptoms of the last three being so slight, as to be scarcely

discernible. A large dose of ipecacuanha, with the addition of a grain of tartar emetic, is the best for the purpose; and the time for giving it, is on the first, second, or third day; although in many cases later than this, it has been of the greatest service.

Of course there are cases where the administration of an emetic is inadmissible, and there are others where it is right to repeat it. When the inflammatory character is high, and in particular when the lungs are much affected, it is always prudent to precede the emetic by a venesection, as our author did in his own case. On the first day he was bled, on account of tightness at the chest; on the second, he took an emetic; and these remedies, succeeded by a blister between the shoulders, formed the whole treatment of his own case. To reconcile the apparent inconsistency between the inflammatory character and the benefit derived from emetics, it must be remembered that the first is not pure, but is partly catarrhal, and that the emetics are useful, by determining to the skin.

For fulfilling the indications in this stage, no remedies whatever are better adapted than mild diluents; they tend to produce the restoration of the functions of the skin, the great importance of which object is proved by experience. This stage has not only an inflammatory-catarrhal, but also an exanthematic character; and the encouraging of the cutaneous eruption is of great consequence, seeing that this is not an accidental appearance, and that it is always followed by an alleviation of the other symptoms. These diluent drinks should be mucilaginous, gently diaphoretic, or acidulous, according to circumstances; and they answer better tepid than cold.

Further, neutral salts in moderate doses, by stimulating the mucous membranes, clearing away the morbid secretion of mucus, and gently opening the bowels, are highly advantageous.

This constitutes the practice at the beginning of the disease; and although it may appear mild, and almost inactive treatment, it has the best effects. Whoever adopts, in the ordinary course of typhus, a very active practice, such as blood-letting, purgatives, and stimulants, will disturb the progress and crisis of the disease.

Concerning the advantages and disadvantages of blood-letting in typhus, there has been very great contention; and, as often happens, too many good, and too many bad effects have been attributed to it. In many, and certainly in most cases, it is pernicious, not merely in the nervous, but also in this, the inflammatory stage. In mild, regular typhus, occurring even in plethoric patients, it is a superfluous remedy; but a

highly aggravated inflammatory character, or dangerous local inflammations indispensibly require it. If it be omitted in such cases, the local affection ends unfavourably, and the nervous stage is rendered much more dangerous.

When the bowels are gently open in this stage of typhus, it is always a favourable occurrence, but severe purging is prejudicial. Along with the bad effects of blood-letting, it has the effect of drawing the fluids from the skin, which is always hurtful in catarrhal affections, and it is apt subsequently to occasion colliquative diarrhœa. But it is not to be inferred from this that every slight diarrhœa in the inflammatory stage of typhus is so dangerous as many suppose: on the contrary, gentle purgatives may be harmless in strong individuals, and in cases where it is necessary to evacuate impurities from the bowels, their moderate, but not continued use, is beneficial.

Tonics and stimulants are almost always hurtful in the inflammatory stage of typhus, and the more so, the more powerful they are.

In the fifth, or Nervous stage, the period arrives when the hitherto excited and oppressed vital functions sink into weakness and exhaustion; instead of an apparent, a real debility is now impending ; the nervous system is at the same time particularly affected; and the functions of the skin are more disturbed than before. The indications therefore are to support and gently stimulate the system, at the same time bearing in recollection the preceding inflammatory-exanthematic character, so that it be not by violent measures made again predominant. The fittest remedies for this stage are blisters, camphire, and arnica. That even now emetics are also beneficial is undoubted; and therefore, either when they have been neglected in the previous stage, or on account of inflammation could not be administered, they may now be given with the best consequences.

Blisters not only directly stimulate, but they produce a counter-irritation to the sensorium ; they communicate a favourable impression to the nervous system, render the skin perspirable, and check the bias to diarrhœa. There is a particular time for their application, which is the seventh or eighth day of the fever, just when the nervous stage opens. It is not the mere vesication which is beneficial; but the sore which is occasioned, and the discharge which is kept up by continuing it in suppuration. The best places for the application of the blisters are the calves of the legs and the nape of the neck. A blister over the whole head is unnecessary.

Camphire at this period of the disease is a most useful medicine. Its powerful effects on the whole nervous system,

but particularly on the sensorium in a state of irritation from want of sleep, and on the morbid state of the skin are amply proved by experience. It is one of the few stimulants which does not tend to revive the inflammatory state, and is also one of the most diffusible. In this disease it must be given in moderate doses; too small are inefficient, and too large are hurtful. Ten or twelve grains a day, or one every two hours, is about the proper quantity.

Arnica, the effects of which are known to be stimulant, alterative, and in large doses emetic, seems also to act in a peculiar and specific manner on the brain, by exciting the action of its smallest blood-vessels. In typhus it evidently lessens the stupor, giddiness, and delirium; and also acts beneficially on the skin. But the use of this medicine is safe and beneficial, only when the inflammatory character is quite gone. The dose is from two to four drams in an infusion, which must be allowed to stand half an hour. This medicine seldom occasions vomiting, though sometimes nausea; it does not promote but rather prevents loose stools. On the whole, it is a remedy which cannot be sufficiently praised, for if it does not always immediately check, it at least evidently and often strikingly diminishes the nervous character.

Volatile stimulants, though transient in their effects, are also of much use in this stage of typhus: the best are the roots of angelica and imperatoria, and the flowers of the calamus aromaticus. With the first, our author has treated hundreds of cases successfully.

"In the extensive typhus epidemic of Gallicia in 1806, and lately in the French military hospitals at Vienna, having an immense number of such patients, and it being impossible to look accurately after every one, it was requisite to treat them chiefly according to some general rules, and so long as the case shewed no anomalous appearances, the following simple treatment was pursued, with the greatest success, not one man in ten being lost. On the first day of the fever an emetic was administered, and this was succeeded by diluent diaphoretic decoctions. About the seventh day, when the nervous stage began, the typhomania and debility being increased, the skin and tongue dry, and the belly distended, blisters were put on the calves of the legs, and eight ounces of an infusion of two drams of the flowers of arnica, and as much angelica root, with a little *liquor anodynus*, were given daily, two table spoonfuls every two hours, alternately with camphire powders."

The great advantages to be derived from wine will be mentioned under the head of diet. It is to be remarked, that the benefit derived from stimulants in this disease, does not arise from powerful doses, but from the uniform and continued

employment of a small quantity of the medicine which is selected. As a man who is intoxicated sleeps out his state of insensibility and debility in twelve or twenty-four hours, so also will a typhus patient sleep out his stupor in about fourteen days, if life can be so long preserved and supported.

Cinchona and tonics are superfluous medicines in this stage of typhus, so long as it is regular; but opium, calomel, and purgatives, are not only superfluous, but hurtful. It might be supposed, à priori, that opium would be one of the best remedies in this stage; it promotes diaphoresis, checks looseness, and might be supposed to mitigate the sleeplessness and delirium; but observation and experience prove the contrary. If it be given in considerable and repeated doses, it adds stupor to stupor; and, by benumbing the vital powers still more, prevents their exertions from producing a favourable crisis; it prolongs the disease, and produces a tendency to apoplectic death. There are some severe symptoms, which occasionally demand its use, as colliquative diarrhœa, &c. but even for these, it must be used prudently. A large dose, once or twice repeated, fulfils this symptomatic indication, better than repeated small doses. As for calomel, which has been recommended, our author has repeatedly tried it; evidently good effects from it he never witnessed; bad effects frequently. As for specific action in this disease, it has none. It generally produces or increases the diarrhœa, from which so much harm is apt to arise in the nervous stage. From all this it is evident, that very various, and often very opposite medicines, may now and then be of service in typhus, while nature alone had the principal share in curing the disease; and from this the different results from the same treatment, and the same results from different treatments, which have occasioned so much contention among medical men, may easily be reconciled. *Pessima medendi methodo non omnes trucidantur.*

In the sixth stage or Crisis, which is an exertion of nature, little good can be done by art. If the two preceding stages have been prudently treated, nothing more is necessary in the way of medicine, than to promote the beneficial evacuations which should now take place; and as the principal of these is perspiration, the only requisite is mild diluents.

All medicines must not be abandoned immediately after the crisis; or if they are, they must be replaced by an appropriate diet. The stimulants must now be milder, and given at longer intervals. Our author gives up the camphire and arnica, and only continues an infusion of angelica for a longer or shorter time, according to circumstances.

In the stage of Convalescence, treatment by medicine ceases.

In irregular typhus, the different anomalous appearances and symptoms require various modifications in the plan of treatment, which has been just recommended for the ordinary and regular course of the disease. The inflammatory character may be of unusual violence, and this requires a more active antiphlogistic treatment, always recollecting however that the nervous stage must follow. One, or at most two blood-lettings are generally sufficient in the severest cases of this kind. But if local inflammations are present, more copious evacuations of blood may be necessary. Inflammation of the brain, and a semi-apoplectic state, demand these urgently, and leeches also in this case are of great service. For inflammation of the lungs, general bleeding is the chief remedy; blisters on the chest, and antimonials, being chiefly serviceable, when, although the affection be not entirely removed, it is not safe to bleed more, and when this state continues in the nervous stage. Actual inflammation of the intestines is seldom met with in typhus; but our author has seen it several times, as also acute rheumatism. In the first disease, mucilaginous medicines must never be omitted. Real hepatitis also occasionally occurs.

Frequently the gastric character in typhus is so aggravated as to predominate every other. The impurities in the primæ viæ may be safely removed by laxatives in the inflammatory stage; but in the nervous, almost solely by clysters.

If the nervous character is excessive, or has taken place suddenly and unexpectedly, then, powerful and frequently repeated doses of volatile stimulants are necessary. Musk is of little benefit. Camphire in large doses, ether, and ammonia, best answer the object in view, in conjunction with blisters. Our author has in a few cases tried phosphorus, but never with success; and in the stomach, traces of inflammation or gangrene were always found on dissection. If periodical exacerbations now occur, cinchona is the best medicine.

During the nervous stage, a disagreeable, and by no means rare occurrence, is passive inflammation in some of the debilitated organs, which has been called nervous inflammation by some modern authors. It is frequently met with in the brain, not so often in the lungs, but more commonly in the intestines than any where else, and is nothing more than an irregular termination of the preceding inflammatory state of the secreting membranes. The nervous inflammation of the brain, indicated by sopor and more oppressive typhomania, is to be combated by blisters on the head, by camphire, and arnica.

In that of the lungs, indicated by tightness of the chest coming on during the nervous stage, and consisting seemingly in the debilitated vessels of the organ being gorged with blood, our author has in numerous instances derived the greatest advantage from premising to the use of stimulants a small bleeding of four or six ounces; which renders the vessels much more readily excited by the stimulating remedies, viz. blisters on the chest, camphire and antimonials. Nervous inflammation of the intestines, known by a painful feeling of the abdomen when pressed, a small and irregular pulse, and frequently by tenesmus and dysentery, admits only a cautious use of blood-letting. Blisters on the abdomen, and largepoultices are of much service; and camphire, contained in large quantities of mucilage, is to be given internally, and also administered by clyster.

Nervous inflammation of the liver, and the jaundice which often accompanies it, are dangerous anomalous incidents. Calomel does not produce any beneficial effects in these cases, and our author knows no other medicine which can be relied upon. He has most confidence in stimulating frictions of the right hypochondrium.

If the putrid character now shews itself, which is almost always attributable to bad air, the debility is still to be the chief object of attention, whilst the putrid diathesis is to be combated by cinchona, mineral acids, and large doses of camphire. Blisters must never be employed but as rubefacients.

Swellings of the parotids are always unpleasant accidents, even when critical. It is best to endeavour to prevent or check them at first, by cold local applications, and keeping the bowels moderately open. If these, however, are not successful, then suppuration is to be promoted, as quickly as possible, by stimulating poultices; and the abscess is to be timely opened, to prevent a tedious and troublesome affection.

For diarrhœa and dysentery, opium in large doses, seldom repeated, is the best remedy, along with mucilaginous drinks, and and wine. Hiccup and meteorismus, being only symptomatic, are to be remedied by the means used against the inflammatory state of the intestines. In some cases, however, the prudent use of the carbonate of ammonia, has had the best effects on the meteorismus.

Diet is of the greatest importance in this, as well as in every other disease where the cure is chiefly the work of nature, and is often of more service than all medicine whatever. It must be suited to the difference of the stages, and the different morbid characters which prevail in these. In the inflammatory stage,

every article of it must be carefully attended to. The air must be pure, dry, and cool; without any draught. For this purpose the room in which the patient is placed, should be large and open, the bed without curtains, and the air be refreshed by opening the window at intervals, without allowing the patient to feel the least chill. Dry solid food is of too difficult digestion. The most proper is barley or rice gruel, or the like, with the addition of a little lemon juice, vinegar, or wine, in moderate quantities and repeated three or four times a day. For drink, lemonade or acidulous wine largely diluted with water, answers best; if cold, they occasion or aggravate cough, and should therefore be tepid. If the cough be severe, the drink should be mucilaginous. The patient should also be made to partake of some warm and mildly diaphoretic infusion, two or three times a day.

All motion, however slight, is beneficial. If he be able, the patient should, with some assistance, make a few turns in his room once or twice a day; and if this cannot be done from its occasioning syncope, he should be made to sit up occasionally in bed. By this the head is somewhat relieved, the sleep is rendered much more refreshing, and the action of the skin is promoted. It is true that every exertion costs the patient a struggle against his torpor, but the very overcoming of this is salutary; for in typhus, as in intoxication, the more one yields to the stupor the more overpowering it becomes.

"I once had under my care a canon, who, visiting the hospitals from an impulse of piety, during a typhus epidemic, caught the infection. This amiable man paid the utmost attention to his attendant's professional advice, which was, that he should now and then get out of bed, and endeavour to make a few steps. He rose thrice a day, and, supported by two servants, walked or dragged himself about in a large room, for near an hour each time. Since that, I had another individual, who, in his delirium, would make a journey, and having got up walked about for a long time so arduously, that it was found necessary to bring him back to bed by force. In both cases, the course of the typhus, particularly of the nervous stage, was mild and favourable, and such as I have rarely witnessed."

It is also proper to endeavour to rouse the patient from his stupor, by stimulating the external senses: hence the room in which he is, should not be too dark, nor ought noise around it to be too carefully prevented. If the patient be solely occupied with himself in his delirium, he should be conversed with.

It is wrong to endeavour to excite perspiration in this stage by warm covering. During summer, a sheet is quite sufficient covering.

The diet in the nervous stage requires as much attention as in the preceding. The air should not be kept so cool, and the bed coverings are to be a little warmer; but the temperature is to be kept as uniform, and the purification of the air is to be as much attended to, as in the previous stage. Cold, moist air, particularly in draughts, will occasion a diarrhœa, which no medicine can stop, so long as the cause exists. In one typhus epidemic mentioned by Hildenbrand, the great majority died of this, being laid in the corridors of convents, and in churches, which it was impossible to warm, and where moisture was unavoidable.

The food should now be more nourishing, but of easy digestion; such as strong soups, beer or wine-soup with eggs, &c. Solid dry food must not be permitted previous to the crisis. Fruit gives too little nourishment, and tends to occasion diarrhœa. Wine is now indispensable; it stimulates and nourishes at the same time; and acts favourably on the brain, stomach, intestines, and skin: the stronger and older it is, the better. It is to be given in spoonfuls, frequently repeated. Among the lower classes of Russians and Poles, our author made use of brandy, to which they are accustomed, in the same way. Mucilaginous drinks are very beneficial; they moisten the parched tongue, and relieve the irritated intestines; but they must in some measure be forced upon the patient.

Voluntary motion can now seldom be effected; but the sitting up in bed with assistance must be continued. Stimulating the external senses is more necessary now than previously.

The greatest cleanliness is requisite. Errors on this point tend to produce ulcers on the skin, where pressure is made. The tongue should also be scraped, and the teeth washed daily with salt and water, vinegar and water, or lemonade. It may be adviseable to cut off the hair in the preceding stage; but in the present, our author has several times seen it succeeded by unpleasant accidents, when it was done for cleanliness.

During the crisis, a greater degree of warmth in the bed clothes is proper; and warm fluids should be given as drink, to encourage the salutary evacuations which now occur, and particularly the perspiration.

During the abatement of the disease, the importance of dietetical management increases, as treatment by medicine is now gradually abandoned. Pure air, nourishing solid food of easy digestion, wine, and gentle exercise, are the chief remedies.

During the convalescence, the whole is left to diet. In satisfying the patient's cravings, care must be taken neither to indulge nor restrict them too much. The room in which he has lain

should now be exchanged for another, airy and clean, and he ought not to be allowed to engage in any active occupation too soon.

In the twelfth chapter, our author considers the measures of prevention for the contagious typhus, both in regard to individuals, and as objects of medical police; but these are points which it is not our intention to enter upon at present.

In the last chapter, there are a few remarks on generated typhus. Hildenbrand considers it undeniable that the typhus miasma may be generated under peculiar circumstances; that these circumstances are to be sought solely in the atmosphere, and arise from the accumulated and condensed effluvia of individuals crowded into a small space, and most frequently of a number of patients with other fevers. What the changes in the atmosphere are we know not, but that changes in it of some kind are the cause of the generation of typhus miasma is incontrovertible; since, by allowing the circumstances which have been mentioned to operate, we have it in our power to produce the poison at any time, and, on the contrary, by avoiding those circumstances to prevent its generation.

"Soon after the erection of the general hospital at Vienna, a physician unluckily took it into his head to put all the cases of fever in wards by themselves, the consequence of which was that a typhus infection generated, which proved fatal to a great number of individuals; an accident which has not happened since the cases of fever were intermixed with those of chronic affections."

Besides attacking the healthy, this miasma also attacks the sick, under whatever other kind of fever they may already labour. In the latter case the course of the typhus is never regular, but anomalous; the infectious process, at least the first part of it, seems to proceed with more rapidity in those already labouring under fever; there is no febrile shivering to mark its commencement, and the nervous character, which soon appears, is often attributed to other causes.

"Every other fever can thus pass, or be transformed into typhus, whether intermittent or continued, inflammatory, gastric, exanthematous, or even nervous. The intermittent fever now becomes continued, the characters of the others are concealed by the essential symptoms of typhus which now predominate. In addition to the previous febrile symptoms; giddiness, stupor, typhomania, redness of the eyes, and catarrhal affection of the nose, fauces, trachea, and lungs, dryness of the tongue and skin, deafness, distended abdomen, and the peculiar eruption, are the principal signs which indicate typhus to be already conjoined to the earlier fever, and which differ from the signs of non-contagious nervous fever principally in this, that in the

latter the stupor and catarrhal symptoms are entirely wanting, whilst, on the contrary, far more numerous and more violent nervous affections are present, as tremor, convulsions, spasms, and general erethismus in the highest degree. The periodical, daily or tertian exacerbations, are much more common in the simple non-contagious nervous fever than in typhus."

We have already had occasion to express our high opinion of Professor Von Hildenbrand, as an accurate observer of disease, and as an enlightened and successful practitioner. After so extended an analysis, it is impossible that we can find room to say any thing in the way of criticism, upon his invaluable and truly classical work on typhus. It no doubt contains a few things of minor importance, to which we might object; but on the whole, we regard it as a work of superlative excellence, worthy of being read and studied by every medical practitioner. One point only we shall here particularly mention, of high importance, and which we think Professor Von Hildenbrand has incontrovertibly established; namely, that typhus is a disease which when once begun it is impossible to stop—that it must have its course, like small-pox or measles. The practical conclusion drawn from this fact is, that all attempts at a direct cure are vain—that our treatment must consist in watching its progress, in order if necessary to mitigate the violence of its symptoms.

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ART. III. *Sulla Gravidanza susseguita da Ascite. Memoria del Cavaliere Antonio Scarpa, Professore Emerito, e Direttore della Facoltà Medica della R. I. Università di Pavia. Treviso, dalla Tipografia Provinciale di Francesco Andreola,* 1817.

*On Pregnancy accompanied by Ascites. By Antonio Scarpa.* Folio, pp. 10.

THE present Memoir was published in the first volume of the Scientific and Literary Memoirs of the Athenæum of Treviso, but has since appeared separately, and has been transmitted to us by our correspondent at Pavia. We doubt not that our readers will feel satisfied by our presenting them with the Memoir, scarcely abridged. It is Professor Scarpa, then, who speaks in the remainder of this article.

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One of the most serious accidents which sometimes connects itself with pregnancy in its commencement, or about the middle of its course, is a great collection of serum within the pregnant uterus, or externally to it and strictly within the abdomen,

or in both of these cavities at the same time. In all of these cases, independently of the very considerable inconvenience arising from the great swelling of the inferior extremities, the rapid distension of the abdomen becomes so enormous in the course of a few months after conception, that the displacement backwards of the abdominal viscera, caused by the uterus in the state of dropsy, or accompanied by ascites—the push which is made upwards upon the diaphragm—the constriction which is necessarily produced in the cavity of the thorax—and the oppression of the organs of respiration, at last throw the patient into a state of great distress, and of imminent suffocation.

When the morbid collection of serum occupies the cavity of the gravid uterus, the disease is strictly nothing more than an extraordinary increase of the liqour amnii, and nature frequently provides a remedy for the consequences of such an accumulation, in premature parturition. But when the serous effusion takes place externally to the gravid uterus, and in the same manner as the *acute* dropsy of the abdomen, the complicationis much more dangerous, and always demands the aid of surgery. This will clearly appear in the relation of the following case.

Giovanna Beccali, aged thirty years, the well formed and vigorous mother of four healthy children, gave signs of conception in December, 1806. Before that period, she felt a constant obtuse pain in the whole circumference of the abdomen, and still more distressing in the loins, for which she had herself bled. Owing to unskilfulness, or negligence in the surgeon, the blood-letting was exorbitant, and ad deliquium. Aggravated pains continued in the abdominal parietes, and in the loins, to which were now added an uncommon debility and inertness of the inferior extremities, with a constant sensation of coldness in the feet. Œdema now began, mounting successively from the feet, to the legs, thighs, nates, loins, and parts of generation. To vomiting, and nausea, the usual attendants on pregnancy, was added almost unquenchable thirst. The urine became scanty, and reddish; the abdomen increased in size with extraordinary rapidity, so that in the fifth month of utero-gestation, Beccali appeared as if at the end of her pregnancy. At this period, the thirst continued, and the scanty and latericious urine was as formerly, all the evacuant and diuretic medicines which had been prescribed having been ineffectual.*

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* Lorsque l'ascite est occasionnée par la grossesse, celle-ci est ordinairement très-facheuse dès les premiers mois. Les vomissements, et l'inappetence ouvrent

At the beginning of the sixth month, the tumefaction of the inferior extremities, and the distension of the abdomen, were so excessive, that the unfortunate woman, oppressed by difficulty of breathing, frequent faintings, impossibility of resting in the horizontal position, want of appetite, and almost perpetual watching, with her countenance tumid and livid, felt herself as if at the point of death.

She was in this miserable state, when I visited her for the first time. The abdominal integuments were livid, and appeared extenuated; the umbilicus was prominent; the hypochondriac regions tumid and singularly elevated; the inferior extremities greatly swoln, and threatening in different parts to give way. Although the woman had felt no motion of the fœtus, yet the elevation of the neck of the uterus, and the tumidness of the lips of the os tincæ, discovered on examination, joined with the former signs of conception, left no question concerning the existence of pregnancy. On striking the abdomen, there could be no doubt that a copious serous effusion occupied its cavity. The fluctuation of the fluid on percussion was not equal in all parts; it was obscure in the hypogastrium, and in the flanks; manifest in the elevated hypochondriac regions; very vibratory in the left hypochondrium near the edge of the cartilages of the false ribs.

The undoubted presence of fluids in the abdomen, complicated or not as it might be with dropsy of the pregnant uterus, and above all, the imminent danger of suffocation, to which I saw the patient exposed, determined me to practise without delay paracentesis of the abdomen, in preference to the puncture of the uterus, as besides it did not appear sufficiently clear that the uterus itself was dropsical. As the fluctuation was much more distinct in the left hypochondrium than elsewhere, I determined to perforate the abdomen close to the edge of the false ribs, though an unusual situation for this operation, with the full confidence of being able in this way to evacuate the fluid, without the smallest injury to the fundus and body of the gravid uterus, or to any of the surrounding viscera. The trocar being introduced between the edge of the rectus muscle and the edge of the false ribs, a limpid and inodorous fluid escaped in a continued

la scene; la foiblesse survient de même que l'alteration, et alors on boit beaucoup pour la satisfaire. Les urines ne coulent qu' en petite quantité; les jambes s' engorgent; le ventre s' eleve; la fluctuation se fait sentir, et il est rare que la mère sent son enfant avant le sixieme, ou le septieme mois, qu' elle le porte à terme, et plus rare encore que l'enfant vienne vivant, et bien constitué. Barraillon. Mem. de la Soc. R. de Med. An. 1784–85.

stream, in quantity from twenty-five to thirty pounds. The patient, far from feeling herself weakened by this evacuation, as is commonly the case in *chronic* ascites, felt herself stronger. Respiration became more and more easy, and a certain hilarity of countenance testified the relief which she experienced from the operation. The fluid being completely evacuated, the circumference of the gravid uterus was distinctly felt with the hand. Being put to bed, and having taken a bason of soup, and a little wine, she slept placidly for three hours. On awakening, she voided a large quantity of urine, and continued to do so during the night. At day-break, she perspired over the whole body, and said she felt an appetite. In the course of the following night, labour-pains came on, the membranes gave way, the liquor amnii was discharged in such abundance as to be reckoned at fifteen pounds by her attendants, and then two fœtuses were expelled, who died in a few seconds. The placenta was speedily expelled by the natural force of the uterus. Every thing else proceeded regularly, and the milk fever was mild, and of short duration. The tenth day after the operation, the puncture made by the trocar was closed and cicatrized, and the swelling of the inferior extremities appeared inconsiderable. On the fourteenth day after the operation, Beccali rose from bed, and resumed her domestic employments. She afterwards enjoyed excellent health, and in a few years became twice pregnant, and was delivered without any accident.

Though the perforation which I made through the abdominal parietes in the left hypochondrium, between the external edge of the rectus muscle and the edge of the cartilages of the false ribs, may seem at first view an operation sufficiently dangerous, yet if all the circumstances of the case be attentively considered, it will be found really not to have been so. The fluctuation of the fluid on percussion, in the left hypochondrium, was felt as if at an inconsiderable depth below the skin. Besides, it is well known that from the position of the fundus and body of the gravid uterus at the beginning of the sixth month, and the situation of the abdominal viscera, which are pushed towards the upper part of the abdomen, and against the diaphragm, the fluid contained within the abdomen is forced to collect in greatest quantity precisely in the hypochondriac regions. For confirmation of this, we have only to look at Hunter's plates,* in which the body and sides of the pregnant

* De Utero Gravide, Tab. I. VIII.

uterus are distinctly seen to be applied to the anterior part and flanks of the abdomen, while a portion of the small intestines, the tranverse colon with the omentum, stomach, liver, and spleen, are thrust by the fundus of the uterus towards the back, and above the umbilicus towards the diaphragm, where they meet with least resistance. The fluid contained within the abdomen has consequently no wider space, in which to collect itself, than between the pregnant uterus and the viscera, ; that is to say, in the hypochondriac regions, precisely where the fluctuation on percussion is most distinctly felt; and more particularly in the left hypochondrium than in the right, from the spleen filling up less space than the liver. Hence it is that the interposition of a large quantity of fluid between the uterus and the viscera, furnished an opportunity for perforating the abdomen, in order to evacuate the fluid, without any risk of wounding the gravid uterus, or any of the viscera by which it was surrounded.

Not that I believed it so dangerous to puncture the pregnant uterus as some have thought it.* I know instances of this operation having been performed upon the pregnant uterus, both in a dropsical state, and when it was not dropsical. Bonn† relates a case of paracentesis performed upon a woman near the end of uterogestation, who by mistake was supposed to be affected with ascites, in which the puncture of the uterus had no other bad consequence than that of accelerating labour. Camper‡ observes, that "in utero hydropico paracentesim, vitata vescica, posse adhiberi inter umbilicum, et pubem sine ulla gravi sequela." The observations of Langio§ and of Reiscard|| confirm this. In October, 1808, my colleague Nessi successfully punctured the dropsical uterus of a country woman, aged thirty-five years, who, in the fifth month of her pregnancy, was threatened with suffocation. The perforation was made in the linea alba, between the pubis and the umbilicus. The woman gave birth to two children, who died soon after. The patient rose on the fourteenth day after; but was seized with menorrhagia, which, however, had no bad consequences.**

But I must observe, that there is a difference between the

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* Chambon—Maladies des Femmes, T. I. page 28.

† Anat. und Chirurg. Remark.

‡ Dissert. de Hydrope.

§ Lib. I. Epist. XXIX.

|| Haller—Disput. Chirurg.

** In three such cases, which have come under my own observation, there were twins.

gravid uterus in the state of dropsy, and the gravid uterus accompanied by ascites. In this second case, the perforation of the uterus might not be necessary, from there being no unnatural accumulation of the liquor amnii; and did these two kinds of dropsy exist in the same subject, after the liquor amnii was evacuated, the fluid of the ascites would remain to be let out, unless we meant to leave it to the absorbents, the action of which in weakly patients is slow and uncertain. On the other hand, when the fluid effused into the abdomen is evacuated, should it happen that the pregnant uterus is not dropsical, it may continue its functions to the natural term; and if dropsical, after the paracentesis of the abdomen it becomes excited by sympathy to expel its contents, and this expulsion takes place without the needless irritation of a wound made in the viscus itself. And as for *acute* ascites, it is undoubted, that the artificial and complete evacuation of the fluid contributes powerfully to reestablish the equilibrium between the exhalant and absorbent systems of the abdomen, as well as to excite the action of the secreting urinary organs. I have had frequent occasion to confirm the truth of this important point of practice in cases of *acute* ascites in children after measles, and in puerperal women in consequence of peritonitis. Chambon* advises that in urgent cases of pregnancy, attended by *acute* ascites, the surgeon should confine himself to making some superficial scarifications of the legs and feet; and should even defer these as long as possible, although the period of parturition be yet distant. It must be concluded, that the author whom I have cited had never been a spectator of the anguish, and imminent danger of suffocation, to which the patient is exposed in this combination of circumstances, to propose a means so slow and uncertain, as that of scarifying the inferior extremities, in order to remove the fluids effused into the cavity of the abdomen.

As to the diagnosis of the two kinds of dropsy above mentioned, when they exist separately, we possess sufficient signs by which to distinguish the one from the other. When the uterus alone is dropsical, the abdomen has the same regular form, as at the termination of uterogestation, although only five months have elapsed since conception. The motions of the fœtus, if they are occasionally felt, are irregular and very indistinct. The patient has no thirst. The abdomen, upon percussion, manifests but a slight, deep-seated, and obscure

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* Loc. cit.

fluctuation. It is surprising, indeed, that the pregnant uterus in the state of dropsy, although it does not exceed its size at the end of uterogestation, produces a threatening of suffocation, which no woman on the point of parturition experiences. Our surprise will cease, if we reflect, that in the ordinary course of pregnancy the distension of the uterus takes place by almost insensible degrees, to which a gradual yielding of the peritoneum, of the abdominal muscles, and of the external integuments corresponds, by means of which, after the fifth month, the gravid uterus falling forwards from the perpendicular line of the body, gradually ceases from pushing the abdominal viscera towards the diaphragm. But as the dropsical gravid uterus quickly acquires the size of a pregnant uterus at the period of parturition, whilst the peritoneum, the abdominal muscles, and the integuments, are still rigid and resisting, the uterus is kept in the longitudinal axis of the body, and hence continues to press up the abdominal viscera towards the diaphragm, and to diminish the cavity containing the organs of respiration.

The symptoms of *acute* ascites attendant upon pregnancy are essentially distinct from the preceding. The regular form of the fundus and body of the pregnant uterus is not evident to the touch in this case, principally from the enormous distension and prominence of the hypochondria, arising from the great quantity of fluid interposed between the fundus and posterior part of the uterus and the abdominal viscera. The urine is scanty, and latericious. The thirst is constant. The abdomen upon percussion presents a fluctuation obscure in the hypogastric region, and in the flanks, but sufficiently sensible and distinct in the hypochondria, strong and vibratory in the left hypochondrium between the edge of the rectus muscle and the margin of the false ribs; in which last situation consequently the paracentesis of the abdomen may be executed in such cases without wounding the fundus or body of the uterus, or any of the surrounding viscera.

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Art. IV. *An Enquiry into the Influence of Situation on Pulmonary Consumption, &c. &c. by John G. Mansford, Member of the Royal College of Surgeons of London.*—London, Longman, 1818. pp. 135.

Consumption seems more than ever to be committing its heart-rending ravages in this country. The Continent of Europe is open to the invalid. Ought he to rest contented with the favourite places of resort in our own island? Is it

worth his while to migrate to a southern clime; or are we, with Smollet, to regard the practice "as a senseless custom, which yearly costs England many lives?" If it be deemed expedient that he should resort to milder skies, whither is he to repair? If we may judge from our own experience, there is not at this moment, in the whole range of practice, a subject which more divides medical opinion, and perplexes the physician, while it gives rise to the never-ending uneasiness of many an anxious relative.

We have frequently wondered that nothing satisfactory has been forthcoming to relieve this perplexity, and remove the degree of opprobrium which is apt to be attached to it. English physicians have, in many instances, become resident, of late years, in the large cities of favourite resort abroad. Their talents and acquirements have been such as should have enabled them to deduce legitimate and important conclusions from the facts which came under their observation. Many English medical men have been travelling for their improvement into every quarter of the globe, and accompanying the invalid in every direction, and yet we are not aware that any new facts or deductions on the subject have lately appeared. We have imagined that the explanation of this circumstance was to be found in the many difficulties with which the inquiry abounds. These we need not stop to consider. They seem, however, to act so strongly, as to prevent the individuals alluded to, from furnishing the light which their opportunities must have afforded them, and which our necessities imperiously require.

How many mistakes are we daily called to witness? How comes it that a learned professor, an ornament alike to the university and metropolis to which he belongs, should, within these few months, have informed his patients, that he knew no milder, nor more sheltered spot than Aix in Provence; a city so completely exposed, that its climate appeared to some invalids even colder than the blast on the northern hills? And whence is it that another physician, of no little eminence, should, on a similar occasion, have said, that he had heard objections against every place except Marseilles; a spot where consumption is known to be hardly less fatal than in our own country?

These are glaring, and unfortunately, not very uncommon mistakes; nor are they confined to this country. We have observed no less striking ones among our neighbours. And what shall we say is the proper measure of the uneasiness that is in this way produced? What can be more distressing than that an individual should leave the bosom of his family, or that a whole family even should leave the numberless comforts comprized

under the endearing name of home, and on reaching the place of destination—after a long and painful journey—find themselves under less favourable circumstances, than if they had continued in their own country—and see the disease only preying with new violence on the enfeebled frame of the patient.

Not less impressed than others with the difficulties that present themselves on this subject, and incompetent as we feel to do it complete justice, we are still anxious to excite attention towards it. And if, in so doing, we betray our own deficiencies, we would only make this an additional argument for urging those who are favourably situated, to use every effort in the promotion of an object so desirable, as that of giving to medical opinion upon the present question, something of correctness and uniformity.

In attempting to form a judgment of the effect likely to be produced by the migration of the consumptive to more favoured regions, the first point for consideration that suggests itself, is the effect of climate in producing phthisis. That consumption is owing to the badness of our climate is an opinion entertained by every one. But is there not room to question whether we attach clear ideas to this notion. Few or no attempts have been made to discover what constitutes the unhealthiness of these regions; to analyse the destructive agent; to separate it into its component parts; to arrange these; to assign to them their different powers, and describe their modes of action. And yet these inquiries lie across the very threshold of our subject. We must know what an agent is, before we can trace its operations: we must be able to trace its operations, before we can reason on the best methods of encountering or of avoiding them.

With this subject that of scrofula is very closely connected. It is frequently maintained that phthisis is not a strumous affection—a proposition so much a play upon words, that we shall not stop to discuss it. It is more commonly imagined that there is such a dependence between the two diseases, that we cannot have phthisis without the previous existence of scrofula. From this opinion, generally correct as it is, important mistakes, as we shall afterwards attempt to show, originate, and are now extensively prevalent. It is of tubercular phthisis we speak; and there can be no doubt that it and scrofula are most closely connected. That these diseases are nearly unknown in tropical climates, is a fact deduced from careful observation. That they are equally unknown in the arctic regions, is established on the same satisfactory evidence. Their principal ravages are committed, so far as Europe is concerned, between the 45th and 55th degrees of northern

latitude. Within these parallels, we are all liable to their invasions: we are not afraid to advance further and assert, that we all, though in somewhat different degrees, labour under their influence. To return then to our inquiry, we ask, how is this mischief produced? This question presents a field so little trod, that we hesitate to engage in its investigation; so extensive, that we cannot hope to compass it within the limits prescribed to us. It is however so important, that it would be improper to omit it.

In proceeding, we must institute a comparison between the climate of those regions in which the disease is unknown, and that of those in which it is prevalent; and attempt to detect the differences that subsist between them This end will, perhaps, be best obtained by attending to the circumstances which modify climate in every situation—to these elements which are every where found to produce it. To this investigation then we will immediately proceed.

*Temperature* is, of all others, the agent that deserves the fullest consideration. We need hardly remark that the sun is the great source of heat. The supply thus derived, however, never remains an instant the same in any part of the earth. It varies from noon to midnight, and from summer to winter.

It might be imagined that in this investigation we ought to avail ourselves of the facts presented by medical topography. This branch of our science, however, is quite in its infancy, and has to encounter almost innumerable difficulties. So limited is the stock of information it furnishes, and so great our distrust of that little, that we do not find that we can avail ourselves of any of the conclusions it affords. We prefer having recourse to an empirical law for discovering mean temperature; first, we believe, pointed out by the celebrated astronomer, Professor Mayer, of Gottingen, and which, corrected by the acute and eminently scientific Professor Leslie, most harmoniously connects the various results of meteorological observations made at distant points on the surface of the globe. In a late very interesting Essay, the Professor has constructed a table, exhibiting the mean temperature of every degree of latitude, on principles, for an account of which we must refer to the work quoted below.* It has reference to places on the level of the sea. From this paper we learn, that there is scarcely any va-

* Supplement to Encyclop. Britt.—If we remember rightly, the same principles are laid down in a note, in the Professor's "Elements of Geometry, 1812."

riation in the mean temperature between the tropics, or in the arctic regions; it amounts to only 8°. Fahrenheit: whereas, in either temperate zone, it amounts to 36°. In the part of the globe in which Europe lies, the variation is most considerable. There is a diminution of nearly one degree mean temperature, for every degree we proceed northwards. This, it will be perceived, is a very easy method by which to arrive at the mean temperature of a place. We have merely to ascertain its latitude, and then, looking on our table, the mean temperature is before us. Thus, to take Cadiz, London, and Petersburgh for an example, consult the map for the latitudes; then, the table for the different degrees of latitude; and 65, 52, & 45, are given respectively for the mean temperatures; results corresponding, we believe, with those derived from long and careful observations.

This method, however correct, furnishes only a small portion of the information required. Many lesser circumstances influence temperature in the same latitude; and the effect of these must be measured. Among them, the height of the situation—its relation to the parts in the neighbourhood—the prevailing winds—its exposure to these—its proximity to the sea—its being a damp and variable situation—or the contrary—are the most important.

The consideration of altitude of situation introduces the subject of *atmosphere*. The powerful effect of elevation of situation has long been known. Mount Etna, says an elegant traveller, may be divided into three distinct regions—the fertile, the woody, and the barren. These are as distinct in climate as the three zones of the earth; and might, with propriety, have been styled the torrid, temperate, and frigid zones. The greatest variety of climate, however, on any one range of mountains is to be found among the Cordilleras; for in the space of a few hours may be experienced the greatest intensity of heat, and the greatest severity of cold; while in the ascent, every intermediate variety is quickly observed, and sensibly felt.

Daily suffering from the effects, we have long remained ignorant of the cause of this phenomenon. Astonished at the force and brilliancy of the sun's rays in these elevated regions, we have wondered whither the heat disappeared; and perhaps have been the more surprized, when we reflected that heated air has a tendency to ascend. The phenomenon seems to be satisfactorily explained, by referring it to the law of the capacities of different bodies for caloric. Different aeriform bodies have different capacities; and it is a general property among them, that the power of absorbing heat changes with every change in their density. We need hardly remark, that the increase of the

capacity of any body has the same effect as the withdrawing a portion of its sensible heat, and thus every change in the atmosphere to rarefaction must produce cold, and every change to condensation, heat. It is evident then, that in ascending in the atmosphere, as its density is continually diminishing, its capacity for heat must in like manner increase; and while the elevation of heated air has a tendency to spread the heat equally at all altitudes, this new principle absorbing it as fast as it rises, must produce a degree of temperature exactly proportional to the increase of capacity. It is to Professor Leslie again, that we are indebted for these interesting views; and we are happy to add, that they are not more interesting than true. By a set of ingenious experiments, he has been able on a great scale, a priori, to fix with precision the law of the decrease of the temperature in the atmosphere. As it is principles and not particulars which we are now attempting to investigate, we must dwell neither upon the law nor its details. We can merely state that the elevation of 250 feet diminishes the temperature a degree. The results agree most conspicuously with observation, and thus afford the surest evidence of the justness of the principles on which they are founded.

Thus then, to adopt the language of our traveller, we may have a frigid in the torrid zone, and a fortiori, may have it in the mildest of European countries. But the importance of the fact does not rest here. The relative bearing of any given spot to those elevated regions is another object of scarcely less importance. This ever, and we may add, every where, forces itself upon the attention of those who are seeking for a favoured residence. Thus, the place may be situated half way up the northern brow of the cloud-capt hill; it may lie in an extensive plain, exposed to the cold and steady blast from the snowy mountain, or it may be so sheltered at the base of the sunny slope, that the influence of the bold and aerial intruder is never felt. Simple and self-evident as this appears, it is a circumstance which is often overlooked. Its importance, we are persuaded, is not appreciated. We shall therefore dwell on it a moment longer, by offering an illustration. We recall to the recollection of our readers the many examples that may be found in Switzerland; where it has been said you may gather snow in one hand, and flowers in the other. We shall take that afforded by Mount Jura. In a few hours we are transported from the plains of France to Geneva. Poligny, in the former kingdom, lies freely exposed to the north, at the termination of an extensive plain, and is shaded on the south by the stupendous mountain. By the time we arrive at

La Russie, we have reached nearly its summit. We see the village lying in a little valley, surrounded with hills of a moderate height, and while we contemplate its snug situation, it would require other proofs than those which the eye affords, to discover that its steeple is placed on higher ground than any other in Europe. In descending southwards, whose imagination is not impressed with the fathomless vallies that present themselves. Some of them we conceive cannot be less than a thousand feet deep, and must have an almost perpendicular parapet of this height rising over them on the north. To the south they are freely exposed. Some of them are inhabited. And how, we would ask, can the northern blast ever reach such spots as these? As it sweeps with a steady current over the summit of the mountain, they must altogether escape. Even when we have descended as far as Gex, we imagine that much shelter must be afforded. Ferney is not, perhaps, beyond its influence. But on our reaching Geneva, we have only to turn to the bold mountain, and we inhale a breeze, the freshness of which at once declares its origin.

We need hardly observe, that this is not a solitary instance. How few spots are there on the far-famed shores of the Mediterranean, that are not exposed to the cold blasts of the Pyrenees, or of the mountains of Grenada; of the Alps or Apennines? These are illustrations of a principle as extensive in its operation as it is severe in its consequences. The point in question involves nearly all that is important in the consideration of the influence of the *winds* in the production of climate. This at least is true, in what are called the temperate regions. Though the great law which the winds obey, their speeding from the poles to the equator, may here be exemplified, yet it is with so many perplexing anomalies that it is hardly possible to say what are the prevailing winds; and even when there is something like uniformity, yet the occasional exposure to the unwelcome visitor we are now alluding to, is more than sufficient to stamp a character on a country.

The importance of *aspect* now becomes apparent. Does the spot receive the first chill blast, or has the current met with many an interruption, and thus arrives with diminished force? Is it screened on the farther side of an opposing hill? Accurate observation constantly manifests that these are not trifles. Montpellier is beautifully situated upon a hill. The town surrounds and covers it: one side, of course, has a northern aspect. On this side too, at no great distance, are high mountains. Its beautiful promenade, La place de Peyrou, can never be forgotten. While, from its southern terrace, the eye may behold, in

the obscure distance, the Alps, the Pyrenees, and the magnificent waters of the Mediterranean; on the other, its view is quickly closed by the solemn mountains. The physicians and inhabitants are well aware of the difference presented by these spots. It is on the southern side alone that the invalid is permitted to promenade; and where health is in danger, a house is selected, sheltered from the keener blast. A still more striking illustration of the same truth, as mentioned by Dr. Young, has been observed in our own country. It was noted by Dr. Carrick, respecting the influenza of 1803. "It is well known that Richmond terrace is one of the most exposed buildings on Clifton hill. This terrace forms three sides of a parallelogram, fronting respectively the east, south and west: on the east side, not one family, and scarcely an individual, escaped the complaint, while on the south side, the great majority, both of persons and families, in all other respects similarly circumstanced, escaped it entirely." It is not merely in these northern climates that points of this sort are of importance.

The *proximity to the sea* must not be overlooked. This circumstance contributes much to prevent the extremes of temperature. An island is neither so hot in summer, nor so cold in winter, as a continent. An exemplification of the truth of this proposition is afforded, if we cast our eyes from the continent of Europe to the more extensive one of North America. Lisbon and Philadelphia are nearly on the same parallel of latitude. A fall of snow is regarded as an extraordinary event in the former capital: ice is seen but rarely in a century. The river Delaware, on the contrary, is regularly frozen over every winter. Another illustration is, we are persuaded, very generally afforded to our own countrymen while travelling over the continent of Europe. Even in its southern provinces he often encounters a breeze of a cutting keenness which astonishes him, and which makes a deep impression on his memory. We have heard this remarked by many: we have been able to account for it on no other principle.

The vicinity of the sea also contributes to make a situation damp. We need not go far in proof of this remark. The west is the prevailing wind in this country; and may be said to bring our finest and dryest weather. This, however, is far from true, with regard to our western countries. In these it is known rain more frequently falls than in the others. Saturated with moisture on the Atlantic ocean, the clouds discharge their load as soon as they come into contact with rising ground. In the northern extremity of our island, many, and very striking

illustrations are afforded. This dampness serves very much to deteriorate a climate. In ours it seems to be prejudicial both in summer and winter. It renders heat more oppressive, by diminishing perspiration: it makes cold more dangerous, by increasing the conductive power of the air.

We must say a word on sudden *variation of temperature.* It is confined within narrower limits than at first sight might be supposed. That country in which snow never falls can hardly be said to have any winter; and can very rarely have any change which will be very prejudicial to the human frame. We may allow that this exemption occurs about the 45th degree of latitude; in the latitude of Bourdeaux and Genoa. Again, it is no less true, that during many months of the year there is no change of temperature, so soon as we ascend to the 55th degree. With the exception of our own island, Europe north of this lies long embedded in snow. The summer also in these countries, from its very shortness, is infinitely more steady and serene than that which we enjoy. We may be carrying our desire of limitation a little too far, when we attempt to confine the region of rapid alteration to ten degrees. The changes, however, are here by much the most apparent. They are most marked, too, about the middle of this range, that is, for a few degrees on either side of 50°. Our own country, owing to its insular situation, is one of the most changeable spots of this most changeable district. It is neither steadily hot in summer, nor cold in winter. Its moisture is exceedingly prejudicial. Every change of wind produces a change of weather: and hence it often happens, that in the same day we have a morning of spring, a noon of summer, an evening of autumn, and a night of winter.

In thus attempting to investigate the principles, and to detect the particular circumstances which in every region modify temperature, we feel persuaded we trace the history of the most powerful agent in the production of climate—the great cause of the detrimental effects to which our attention was solicited. A few general principles, if correct, are worth a thousand particular facts. In the delineation there may have been nothing new; we trust, however, it is natural and satisfactory. We shall have frequent occasion to refer to this part of our present article.

We have said that temperature is the most powerful agent. What, it may be asked, are the others? The author whose name we have prefixed to this article, argues for the introduction of a new one. His work consists of two parts. The former is an inquiry into the influence of climate on consump-

tion; the latter, into its influence on the duration of life. The former is occupied in establishing that *diminished atmospheric pressure*, or, in other words, living in elevated situations, is a powerful cause in producing and aggravating the disease. The idea is founded on the fact, that in phthisis there is an accelerated systematic and pulmonic circulation of blood; and that elevation of situation increases this acceleration. The arguments by which this opinion is enforced are exceedingly scanty. Some support is supposed to be derived from the sensations of aeronauts; and also, from the effects produced on animals when placed under the bell of an air-pump. The most direct argument, however, is drawn from experiments made by the author on himself. An elevation of five hundred feet diminishes the atmospheric pressure one-sixtieth. The author found that this elevation quickened his pulse five or six beats in the minute; and he thinks he may venture to assert that this is something like an approximation to the truth.

This is the sum of his a priori reasoning: and we need hardly say it is as unsatisfactory as it is scanty. The au tho informs us that he lives in a spot, perhaps the happiest in the island for determining the point. Why did he not tell us, that the average pulse in the more elevated situations (800 feet above the level of the sea) was 80 instead of 72? We may judge how "like an approximation to the truth" his conclusion is, by deducing from it, that the pulse of the inhabitants of Quito (10,000 feet above the level of the sea) beats at the very moderate rate of 200 in a minute! We need not tell our scientific readers that this calculation is made on far too low a scale.* It, however, very well shows the probable accuracy of the proposition. We have resided at an elevation of 2000 feet; and have felt the pulse in health and disease; and it never appeared to us different from what we had found it in the fens of Cambridgeshire.

As additional proof, the author informs us that he had found the pulse quickened in several of his patients on the sudden decrease of the height of the atmosphere. And, finally, he tells us, that consumption is more common in elevated than in low stations. The truth of this statement we will not at present examine: but we have no hesitation in saying, that the author is far indeed from making it appear that it is owing to diminished atmospheric pressure. The common explanation of

* A reference to any Elementary Treatise on Pneumatics will demonstrate this.

the alledged fact is, that in such situations there is more cold and variation of temperature than in others. We shall give only a fair specimen of the author's mode of discussing these difficult points, if we exhibit the reasoning by which he imagines he overturns the prevailing opinion. Carlisle is situated in latitude 55°; Leigh (we suppose) in 51°. Carlisle is nearly on the level of the sea; Leigh is 700 feet above it: Carlisle, then, is the colder situation. Dr. Heytham, however, gives the mortality from phthisis in Carlisle at a proportion lower than what the author found it at Leigh,—and therefore the common opinion is erroneous! This requires no comment. The question might be quickly determined by discovering the average pulse at different elevations. Till thus ascertained, it is almost useless to conjecture. As matters now stand, we are not inclined to allow that this principle ought to receive a place among the agents which operate in deteriorating climate. Even were the principle correct, counter-agents should be taken into consideration. If decrease of pressure expands the fluids, and quickens the pulse, the cold, which on less satisfactory grounds is ascertained to increase in proportion to this diminution, would probably more than counterbalance the effect.

We have seen it hinted, that *atmospherical impregnations* ought not to be overlooked. The effect of these is prejudicial in manufactories and work-shops, and probably in large and crowded cities; but we should doubt its agency in acting in less confined limits;—in deteriorating climate. *Electrical changes* have also been spoken of. We have seen no reason to suppose that they have any influence in the production of phthisis.

Hence, then, so far as is now known, temperature, varied by numerous circumstances, appears to be the one great agent whose action we can detect in modifying climate. We have seen that it is regulated by certain great principles in every region of the globe, and affected by many minute, but not less important particulars in every latitude and station. We have only to add further, that we are not to measure its influence by its positive intensity, but by the exposure of the frame to its power. We are not to wonder if the Laplander, encased in his skins and furs, and leaving for himself hardly an aperture by which to breathe, or the Kamtschadalen, nearly buried and stewed in his subterranean jourt, does not suffer. These individuals have happily no choice. They must effectually guard themselves against the influence of their climate, and hence they do not suffer from it. It is in latitudes where the effects

are less striking, that the greatest injury is experienced. In warm climates every effort is made to guard against heat. It is in the regions between these extremes that the principal mischief is produced. When heat and cold alternate, it is difficult to catch the happy mean. We have pointed out the reasons why this country is, of all the kingdoms of Europe, the most liable to those sudden variations of temperature which are so trying to the frame: and hence we can explain why in it, we should find the prejudicial effects of climate, most marked and most fatal.

In thus attributing so much to temperature, to climate, we do not forget that causes of another nature have much influence. We here particularly allude to air and exercise, food and clothing, &c. &c. But an accurate consideration of the operation of these causes, will serve only to increase our conceptions of the commanding sway which this mighty agent exerts. We will, at once, exhibit our sense of the great effect which these lesser circumstances produce, by quoting a case which made a strong impression on our minds, and which is even conspicuous on the records of history. It is well known that the children of Louis XVIth were shut up with their father in close confinement, towards the termination of that monarch's reign. His son, afterwards Louis XVIIth, is represented as being a remarkably fine, strong, healthy boy, on his entering the Temple. He was at this time about seven years of age. His confinement was sufficiently barbarous during the life time of his royal father. It was afterwards rendered more inhuman; and still more so after the execution of his mother. He was deprived of all his companions, friends, and amusements. He was shut up in the narrow confines of a grated prison: never suffered to breathe the fresh air, nor to exercise in an open space. He was badly cloathed, worse fed, kept abominably dirty, buffeted and beaten—in short, he suffered what has been justly designated a gradual assassination. The effects of such treatment may be probably conjectured; no case, however, could afford a better specimen of them. How different the frame from that which entered the Temple! In the procès verbal, by M. M. Dumangin and Pelletan, we are told, that the body exhibited great emaciation, marasmus and distended abdomen. The knee and elbow joint presented large tumours containing pus. The lungs were diseased, and adhering to the chest, diaphragm ,and pericardium. The intestines had long been in a state of chronic inflammation, and the different folds adhered to each other. Pus was found

in the abdomen; and the intestines and mesentery were thickly studded with tubercles.*

Causes of the nature which operated in this melancholy case are, alas! but too common in civilized society. In some they operate more powerfully than in others, and these are found to be the individuals in whom there is most hereditary taint. Let us extend this allowance a little further, and we shall find the true meaning of this so dreaded term. Compare the effects produced at the 50th and 20th degrees of latitude. The unfortunate combinations of circumstances we have alluded to, are assuredly not less frequent in Constantinople and Pekin, than they are in Edinburgh and London; and yet it is not to be questioned that there is not one case of the disease in the former capitals for five hundred which are to be found in every part of this country. To what then, we would ask, is this owing? There is only one answer,—to climate—to temperature.

It will not be necessary to say much on the *mode* in which this agent acts. Much effect is undoubtedly produced by the *direct application* of cold to the lungs themselves. We may justly suppose that this effect is not unlike that produced on the surface of the body. A sudden transition being made from heat to cold, the vessels must contract and shrink. After a time, however, under any circumstances, and still more if a change be again made from cold to heat, they will re-act. Increased action, to an extent differing in different individuals, and leading perhaps to inflammatory action, will be the consequence.

This however is not its only, nor perhaps its principal mode of action. This we imagine is to be found in the effects it produces in a *secondary way on the lungs, by operating immediately upon the skin.* An able and ingenious author, who deserves well of his profession, and who is known too generally to require to be named in this place, has lately characterized the process under the term cutaneo-pulmonic sympathy. It is, however, to another writer of the present day, and whose works we ever read with equal pleasure and profit,† that we are chiefly indebted for a highly useful exposition of this important principle. Its explanation is not yet perhaps altogether satisfactory. Much must be owing to the effect produced on the circulation of the blood. The skin being freely exposed to cold, the vessels on the surface contract: the

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* See Lemaire Histoire de la Revolution, tom. III p. 510.

† Dr. Armstrong.

general circulation is impeded: the pulmonic therefore must be loaded, even to a greater extent than that of the other internal organs. This must always be attended with diseased action; and this ever involves the hazard of producing diseased structure. Another mode in which this detrimental process may be effected is not less apparent. The two organs have a common and a transferable function. When the excretions by the skin are copious, the lungs are free; when they are scanty, the lungs are oppressed. In this state there is undoubtedly congestion and increased action of the excreting vessels of the lungs. Here then are two modes in which it cannot be questioned that cold acts upon these organs, through the medium of the skin. It is at present a very common notion that there are others. We hear of sympathy; of sympathy of vessels, and nervous sympathy. We confess we were surprised to see this phraseology adopted by the authors we have just alluded to. They do not give us a hint of what they mean by it. The certain tendency of this language, in such instances, is to introduce confused ideas. If there be other modes of action than those just enumerated, which we cannot detect, why not own our ignorance? why attempt to satisfy the mind with a vague conception? We see no phenomenon which may not be accounted for in the plain manner to which we have resorted; and if so, the other terms ought not to be adopted. Hence then, cold, by acting directly on the lungs, indirectly through the skin, produces contraction in the minute vessels of the lungs, congestion, irritability, and increased action, states which very readily account for the beginning and progress of tubercles and phthisis.

Truth is ever gratifying to an ingenuous mind. It is always, however, of much more importance to be acquainted with the *laws* which an agent observes in its operation, than with the exact manner in which this operation is accomplished. So it is in the present instance: and we may now remark, it was in allusion to the ideas entertained with respect to the operation of those laws, that, in a former page, we ventured to assert that much erroneous opinion existed. The foregoing enquiry was founded on the prevalence—on the accuracy of the opinion, that climate is the great cause of scrofula and phthisis. It was before allowed that those two diseases are most closely connected with each other. But it is, moreover, almost universally believed that climate is tardy in its operation; that its effects are produced not so much by personal exposure, as through hereditary contamination; not so much in a few years, as in successive ages. It is almost universally believed that scrofula is a necessary precursor of phthisis; that when the strumuous taint is awanting,

"none of the common causes of consumption can ever excite, far less produce, the disease." And these conclusions being adopted, it is as universally regarded as a necessary consequence, that nature and art can do but little in preventing and curing this formidable disease.

These opinions are so generally entertained, and so unhesitatingly adopted, that we think it unnecessary to quote any authority to confirm our statement. In denying their accuracy, we do not mean to question that climate has a gradual and an accumulating influence. But we object—strongly object to the narrowness, the exclusiveness of the assertions. We contend, that if phthisis cannot occur without scrofula, that both the one and the other may be quickly produced; not in a long lapse of years, but from a few months exposure to the exciting causes; and in those too, who have no hereditary predisposition. We contend that slight causes, such as are generally considered altogether unequal to the effect, will produce them. And we, moreover, maintain that nature *does* much in the cure, and that art *might do* much in the prevention of this disease.

These are strong statements, and we may be regarded as visionary for presenting them. Let no one prejudge the question. All must wish the ideas to be correct; and we much deceive ourselves if we cannot produce weighty and satisfactory evidence on the subject.

We have first to show, that these diseases may be quickly excited—in constitutions not hereditarily predisposed—by slight causes. In proof of this we adduce the melancholy case of Louis XVII. already quoted, as a specimen of an host of a similar nature, that could easily be produced. We adduce the well-known fact, that a strumuous decline speedily cuts off most of the lower animals we bring from the torrid zone, and attempt to domesticate among us. We adduce the fact, that the inhabitants of tropical regions are little less alarmed at suffering from phthisis when they migrate from home, than the European is of falling a victim on being exposed to the dangers of a burning sun. Nor is this apprehension rested on any other than the surest foundation. Some years ago, three hundred African children, rescued, we believe, from the bonds of slavery, and under the benevolent protection of the best friends of our species, were sent to the metropolis for the benefit of immediate care and education. We have been informed, that during the first year, nothing particular was observed. During the second, they became martyrs to scrofula in every form: and to such a pitch had this extended during the third, that humanity constrained their benefactors to return them to their native shores.

Lately, a very striking illustration of this truth was afforded us, so far south as Gibraltar. An English regiment of West Indian blacks, about 1,000 strong, had been transported thither. Though they arrived in summer, they to a man complained of cold. Additional clothing was immediately served out. Covered to an extent that would have been burdensome to others, effects more marked than their mere perceptions were quickly visible. Scrofula, in its various forms presented itself. Phthisis became prevalent: and we saw many a poor fellow falling victims to that victim, though treated with all the care, and kindness, and hospitality, for which the Rock is now so deservedly remarkable. The common appearances were found after death. We, moreover, adduce the extensive experience of M. Broussais; he found phthisis very common and very fatal among the French troops in Holland. On dissection, the lungs were filled with tubercles. On removing to Italy, the disease nearly disappeared. He believed that it was excited in the former country, in constitutions not at all predisposed to it, by the cold and variable weather they experienced: and on his removal southward, he found that not only was a check given to the further propagation of the disease, but a cure afforded to those in whom it had commenced. Finally, we adduce a similar, and hardly less striking example of the same kind which was afforded during the war, in our navy. We have it on good authority, that phthisis was more prevalent in our fleets, exposed to the vicissitudes of season in a northern climate, than in those which were stationed in milder regions.

That most of the classes of individuals just alluded to would have remained free from disease, had they not been transported to a colder region, can hardly admit of a doubt. We conceive then, that we are not too bold in asserting from the facts, that tubercles may be quickly excited in constitutions, we might be apt to imagine the least liable to them; that important, and even fatal effects may result from a few months residence in a climate which is generally regarded as a mild one; and that decided injury is produced by a somewhat more trying situation, in robust frames, already inured to an inclement sky.

We have next to show, that nature does much in the cure of this disease, an opinion closely connected with the subject we have been considering. If we have at all succeeded in shewing, that too little influence is generally ascribed to external and adventitious circumstances, we have done much. More being allowed to the operation of this class of causes, less will of course be owing to hereditary predisposition. Some of the facts which we have adduced in support of the opinion we have

just left, bear no less strongly on the present. This is more particularly true of the conclusions of Broussais. Had we, however, no other evidence on which to rest the opinion, we should have hardly thought it adviseable to advance it. A mass of irresistible evidence, we contend, is every day afforded to the practical anatomist. How very many bodies do we open in which we find either tubercles, or their cicatricis. In turning to our case-book, the first that presents itself is that of an old man of sixty. In this case tubercles were numerous, and in every stage of progress. Before death he had occasional cough; but for many years at least, no regular symptoms of phthisis. Having attended him during his illness, we did not expect to find any morbid structure in the lungs. We have to-day opened the body of a patient, who had been for months under our observation, without pulmonary symptoms having attracted his or our attention, and yet the lungs were studded with tubercles. But in descending to particulars, we weaken our argument. Is it not true, that in our dissections, we daily meet with cicatrices of tubercles, in people who have died from every variety of disease. Who can tell at what time they were produced, or when they were healed? Were it necessary, we could adduce some of the names most venerated in physiological and pathological science, in confirmation of the opinion, that tubercles, in every state, will often, even in this country, dry up and cicatrize. We prefer, however, to refer a point at once so simple, and so important to the observation and reflection of our readers. If then unassisted nature, even in such a climate as this, does so much, what might we not expect from her, were we but to second and promote her endeavours?

Lastly, we proposed to show, that art could do much in the prevention of the disease. But does not this follow as a corollary to what has been said? Surely it is not in this single instance that Nature withholds her aid? Plain facts, almost without reasoning, declare, that the mere mention of consumption ought not to fill our minds with dread. Nature alone frequently cures: why may not nature and art do so too? Still the appalling reflexion of the unheeding progress of the disease, and of its immense mortality, forces itself upon our recollection. Why has phthisis ever been so dreaded, ever so fatal? Can we obtain no answer to this important question?

We would here point out, that our expression is, that art might do much in the prevention of the disease. Tubercles generated in numbers, and advanced in progress; the whole substance of the lungs altered in its texture, form a case in which little can be hoped for. Let it not, however, be ima-

gined, that in thus guarding our expressions, we mean to condescend to little subtleties, or to have recourse to a few disputed cases, the real nature of which was never known. No!—Hitherto we have attempted to take extensive, liberal, candid, views; and if any practical deduction is to be drawn from them, if any real advantage is to be derived from that which follows, it is only to be obtained by proceeding in the same spirit.

We have seen that the region in which phthisis is most common, is that which we have called the cold and changeable region. It is here alone that it cuts off a considerable proportion of the population; and if occasionally it elsewhere manifests itself, our wonder will hardly be excited when we remember how many lesser circumstances make a changeable climate even in the most fortunate latitudes. We have seen that in this region cold produces the most prejudicial effects; and we have pointed out that the greatest detriment seems to result, in a secondary way to the lungs, from its primary operation on the skin. We before hinted how much Dr. Armstrong had done in elucidating this principle, and we must again refer our readers to his work, for many truly original and interesting details. We think that the injury done in this way is beyond estimation. We have often remarked that a striking feature of the phthisical constitution was a dry and unperspirable skin. Every one must have observed that the disease is most apt to occur in those who are but little protected from the cold. Dr. Armstrong affords us a remarkable illustration of the fact. When at Sunderland, though he practised much among the Society of Friends, he attended only one young woman of that denomination who died of the disease. He ascribes the comparative exemption to the great attention paid among them to clothing.

We would here then put this simple question, Do we then in these regions sufficiently defend ourselves from the inclemency of the weather? Does the prevalence of consumption depend on ourselves? In answer to the former query, we appeal to our individual sensations, to our daily observation. How universally, for six months in the year, do we meet a shivering population crowding along our streets. In the northern regions of Europe the inhabitants effectually guard themselves against the inclemency of the season. The degree of cold we experience is much greater than that felt on the shores of the Mediterranean, and yet we have little hesitation in stating, from our own observation, that in the latter situation the inhabitants shun its influence with much more scrupulous care, than we do. Frequently, for months together, the sky is cloudless, and the

heat is intense. Rain is desired for the benefit of the country, and freshening breezes for universal gratification. But no sooner is a change anticipated, than all are on the watch. No sooner do they feel what they regard as cold weather, than infinitely more care is taken than we ever think of. These facts have often forced themselves upon our notice. In Dauphigny, Languedoc, and Provence, our astonishment was greatly excited by seeing the inhabitants clad, as we expressed it at the moment, ten times more warmly than the people in England. This was at a time when flowers were in full bloom; in a country where the orange-tree, the olive, and the pomegranate flourish. We repeat it, in these countries, the inhabitants were infinitely more warmly clad than we are. The difference in the dress of the women struck us most. Head and feet, from top to toe, they were dressed in a way more fitted to guard against the vicissitudes of the weather, than any class of females we have seen in this country. Were the climates the same, this might appear sufficiently remarkable: but it is still more so when we reflect on the immense difference between them. We happened occasionally to meet some of our countrywomen. It was winter, and they had adopted their English winter habiliments. In the eyes of the females of the country these appeared quite insufficient for winter apparel. If insufficient for the mildest province in the south of France, could they suffice for England? In the provinces of which we are speaking, the inhabitants appeared to be much more apprehensive of exposure to rain than we are. The scrupulous attention they paid to their umbrellas amused us. Nor would we confine these remarks to the dresses of the females. We would almost venture to say that in the south of Spain, whenever there is the least call for it, the inhabitants, *en masse*, possess as decided a superiority over us. There is in this country no garment which affords us the protection given by the Spanish cloak.

It will be observed that these remarks refer to the whole population, but more especially to the sober, wealthy, and well-doing. What shall we say, then, of the unhappy children of poverty, and of the thoughtless votaries of fashionable folly. There are few countries in which poverty exhibits itself in such distressing aspects as in England. This, perhaps, is owing to our being so much a commercial people. We are peculiarly wanting in that sage philosophy which makes a man contented with the lot of his forefathers, with easy, happy obscurity. We must all be great, all wealthy. This leads even the lowest to speculation, and too frequently to ruin. Even our vices are more generally spread than in other coun-

tries; and these, too, lead to poverty. We think there is a greater proportion of our population half covered with rags than in other countries. But there is no necessity for pushing the argument thus far. Allow that we have only our regular share, and the question again recurs, Is it not infinitely more injurious than in other climates? So it is with our silly fashions. Even if we did not in this country, more frequently than in others, meet with flimsy and transparent dresses, with one less comfortable in the evening than in the morning, with more sudden transitions from heated rooms to freezing avenues and splashy streets, yet the effects must be more prejudicial here than elsewhere.

The effects of all this cannot be easily calculated. And is there any propriety in our so unscrupulously taxing our climate with the mischief, while we will not use even moderate means of defence? It is common for the profession to accuse the obstinacy of their patients, and the tyranny of fashion. But the blame rests not with our patients, nor with the fashions. It rests with ourselves. We appeal to the man in practice. Does he ever find the propriety of his advice disputed? If he be earnest, does it ever meet with a refusal? The mischief lies in this, that there is no uniformity of opinion among medical men. One is ever dwelling on the propriety of making ourselves, and especially our children, hardy: exposing them in all weathers, at all hazards. And when our patients, and the public see such diversity of opinion, who can wonder that each chooses for himself? Let medical men be only agreed and decided in their opinion, and speedily folly and fashion will alike cease their opposition, and thousands and tens of thousands will be saved to their friends and to their country.

It will not be here imagined that we wish to introduce effeminacy. We have through life to combat with the surrounding elements. We had lately a patient who was confined for years in a chamber, the temperature of which was regulated with uncommon care. But so susceptible had he become, that every current of air in the room would injure him. Wherever his clothing protected him he escaped: but rheumatism attacked his scalp. On this being defended, his eye, his throat became the seat of inflammation: even the periosteum of the bones of the face became inflamed, and the salivary glands themselves did not escape. The frame must be exposed; but when exposed, defended. This is particularly necessary for the young. Scrofula would be then much less frequent among us. Hereditary taint itself would not excite the disease. This is not the place to enter into the minutiæ of dress; but perhaps none of us are

sufficiently clothed.* There ought also to be greater uniformity in our dress throughout the day, and the year. Thus accoutred, fresh air is our most important food; daily active exercise our most important duty.

This, then, is a plain unvarnished tale; containing perhaps more of what is true, than of what is new. It recommends itself, we are persuaded, to the sense of every reader; and we feel convinced, that were its statements believed and acted upon, it would soon be found that art could do much in the prevention of the disease. As a proof of this, we adduce the testimony afforded by Dr. Cogan. The Dutch, it is well known, are more exempt from the disease than the English, French, or Germans. Their country is both cold and damp; but they keep themselves warm. "The Dutch," says Dr. C., "are forcibly struck with the coughs so universally prevalent in England, at every season of the year. At church, and at the theatre, devotion and pleasure are interrupted; while in the largest assembly in Holland, instances of a similar kind are hardly known. This very striking contrast I have been induced to ascribe to the differences in the construction of houses, and to the peculiarities of dress."†

The preceding investigations concerning climate, and the circumstances which modify it; concerning the manner of its action, and the laws which regulate it, have occupied us long They have, however, we trust, put us in a condition readily and accurately to answer the great question undertaken in this paper, Is it adviseable for the consumptive to resort to milder skies?

The pecuniary resources of our patient can never be overlooked. Warm clothing has been represented as the great prophylactic measure to which all should have recourse. If the symptoms of the disease threaten, this is of course the first point that claims attention: and to the poor, so far as climate is concerned, this, with the insuring a perspirable state of the skin, is all the direction we can give. We do not apprehend that much advantage is to be derived from regulated temperature within our dwellings; none especially at an early stage. The practice of shutting up an individual in one apartment is inconsistent with good air and regular exercise; and whenever a

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"Females should wear a chemise and drawers of flannel or fleecy hosiery, with warmer stockings, and much stronger shoes than are used at present."—*Armstrong on Scarlet Fever, Measles, Consumptions,* &c. &c.

† Beddoes on Consumption, p. 75.

patient is deprived of these, he loses much of his comfort, and of his chance of recovery. If in easy circumstances, and resident in the northern parts of our island, he ought to betake himself to its southern shores, particularly in the more changeable season of the year. Mr. Mansford has attempted to show that proximity to the sea deteriorates a climate. He must, however, pardon us, if we say that he has failed to produce conviction in our minds. The melioration of climate in many of the favourite places of resort, on our southern coasts, is undoubtedly great.

But the lowness of the temperature, the variableness of the weather, and the great humidity, must ever be great objections against this island. From the principles before laid down, we might safely conclude that we should find a mean temperature, ten or twelve degrees higher in the south of Europe. Some of our readers may tell us that this argument is built on speculative principles. By a reference, however, to tables in our possession, we can state, what is hardly necessary, that it is decidedly true. Nay, all the advantages to be derived in some of the places most favourably situated is not thus expressed. What an advantage must it be, never to have frost or snow during the course of a winter, never to have the thermometer under 40°!

This, however, is only one of the benefits to be derived from a southern climate. So long as the case is doubtful, and even to the last stages of the disease, it is a matter of great importance that the patient should be able daily to taste the refreshing breeze; or, to speak in strict allusion, the balmy zephyr. When the climate is humid, this cannot be done. We have now before us a table kept with great exactness in Italy, during part of the years 1817-18. In this it appears that for more than a hundred days, during the very depth of winter, there were only eighteen in which any rain fell: and we give it as a fact which may be relied on, that during that period, five days did not occur, in which, on this account, it would have been unsafe for the most delicate invalid to have ventured abroad,—if he had been ordered to take exercise three times a day, there were not five days in which he could not have minutely complied with the advice. Can we think this a trifling advantage? And, even yet, it is far from all. Ours is a gloomy climate: often for days and weeks together, how dreary, how melancholy! Not so with Italy. It is almost true, that there the sun ever shines—the sky is ever cloudless. All is calm, serene, and cheering. There is a lightness and elasticity in the air, which is truly delightful—a brilliancy and splendour in the heavens, which is most exhilarating. All

nature rejoices under the happiest influences. The spring is ever present—the flowers are ever blooming—the fruits are ever ripening. And has all this no influence on the languid frame? The natural gaiety of the inhabitants declares the effect. Its power over the mind of the stranger is still greater.

Such considerations as these excite our astonishment, that there ever has been, among medical men, a doubt concerning the propriety of the emigration of those who can afford it. Nevertheless, while most authors give the practice faint praise, many speak hesitatingly on the subject. Most practitioners are still doubtful and undecided: they allow their patients to go, rather than strongly urge them to it. This arises principally from two causes: the salutary influence of climate over the disease is first questioned; and then doubts are entertained concerning the superiority of particular climates. Both of these are serious objections, and must now be met.

On the former, we refer to much that has already been said. It is generally imagined, that tubercles once formed must, like fungus hæmatodes, cancer, and other malignant tumours, go on to a fatal termination. Many reasons, however, may be offered why this character should not alike be given to these diseases. Few can doubt that tubercles, in many instances, lie dormant for a long series of years: that their advancement may be checked, and new ones may be prevented from being added to the number. Add to this, another important consideration, sufficiently well known, that, whatever breaks up a constitution, injures the general health, and induces debility, makes us very liable to the disease. The symptoms once incidentally produced are very apt to be maintained. The presence of a few tubercles is the most powerful predisposing cause of this sort. And if it be true, that cold variable temperature is the great exciting cause, how much a matter of importance must it be to remove a patient thus predisposed from the scene of danger? In a climate where more mischief would not be inflicted, the constitutional powers would rally, the active tubercles would exhaust themselves, and cicatrize; the strength would be recruited, health restored, and the patient, ere long, enabled to encounter a trying atmosphere. "If," says the late Dr. Adams, "your patient does not saunter away his time in England, we can with certainty promise a cure."

But that this result may be obtained, the steps must be taken speedily. It is usual for the consumptive to be kept many months in this country, till every means, and every physician, be tried; and time is lost, and the invalid sacrificed. If the winter be approaching, the patient should flee to the most sheltered

region he can find. Of the common remedies we say nothing, as they do not come within our plan. The two most important, perhaps, are travelling and sailing. As circumstances or inclination direct, the patient may make his choice.

This leads to the second point we proposed to meet.—Is the climate of foreign countries so superior as has been represented? We allow that there has been ground for making this a question. It has arisen from insufficient attention having been paid to the circumstances which modify climate. We may go south to the line itself, and experience more cold than in England. A great error consists in imagining, that when once in the south of France, or in Italy, we must necessarily find warmth, and favourable climate. Hence it has been made too much a matter of indifference what spot should be selected, and disappointment has been the necessary consequence. It is not merely a mild, but an invariably mild residence, which the invalid requires: the elements necessary for the formation of such a one are very numerous, and their coincidence is a very rare occurrence. Though in the founding of cities, salubrity of situation has seldom been made a consideration, yet the habitation of man must be resorted to by the invalid: hence it is there are but few places truly valuable. Had not excellent situations been every where expected; had attention, and a name, been given to those only which deserved it, there would have been less disappointment and doubt upon this head.

We must now take a more particular survey of the places of general resort abroad.

Madeira seems, on very sufficient grounds, to have lost the celebrity it once enjoyed. It is far south, and the mean temperature is high: but it is an island, and a small one, and subject consequently to sudden variations of weather. It also contains some high mountains, the tops of which are generally covered with snow. Hence cold winds, snow, and sleet, are frequent. This sleet falls occasionally on the low grounds. Can we be surprised, then, if phthisis sometimes occurs? If there are no spots sheltered from the currents of the mountains, it must evidently be bad. Dr. Gordon, from being long resident on the island, was well qualified to give an opinion, which, as recorded by Dr. Reid, is peculiarly valuable. He considered the south of France as the superior residence; not, however, because the patients sent out to Madeira did not recover (for they generally arrive too late), but from a conviction of the superiority of the former climate.

Similar observations may be made of Lisbon. It stands on high irregular ground, and has a large river running through it.

Both these circumstances are unfavourable. It is also undefended from the breezes of the neighbouring mountains; and cold easterly winds are very common. Snow and ice certainly do not often appear, though they are sometimes witnessed. We have learned, from living authorities, as well as from the testimony of authors, that it is far from being an unexceptionable residence.

In passing to the south of France, we imagine, that we need say, but little of Avignon and Aix, of Marseilles and Montpellier. All these are places of considerable resort. They are delightful residences for people in health; but little suited for invalids. "With respect to the south of France," says Dr. Young, "it is, perhaps, sufficient to remark, that the general proportion of deaths from consumption at Marseilles is fully as great as has been observed in London." We quote this passage that we may point out the erroneous principle on which the remark is made. Relative position must ever be borne in mind; and it might have happened, that within five miles of Marseilles there was a spot where consumption was unknown. The places we have just named are exposed, and often visited by winds from the north. As before hinted, they are severe, and much dreaded. They have received distinct appellations. The coldest coming from the north-east is called Mistral; the other coming from the north-west is denominated Beeze. Wherever the provençal language extends, there names and characters of the wind are to be found. The former variety was known to the Ancients under the name of Circius. It is a clear, cutting, steady breeze; and, whatever may be the cause of it, we are well persuaded that its effects are as strong and trying as any in our own island. It is these winds that are the great drawback to all this part of the Continent; and situations will be found good or bad, other circumstances being equal, in proportion as they are defended from their assaults. Wherever they are frequently felt with violence, they take from the place all title to be considered as a resort for the phthisical. Some of the French physicians we have met in Paris still recommend these places in preference to others. This must arise from their attention not being frequently called to the subject. They still mention Montpellier, Beziers, or some other place in the neighbourhood. The Montpellier physicians, on the other hand, send all sick visitors from their city. They regard it superior to any other spot in that part of France; but much inferior to other places that may be found.

Similar remarks may be extended to Florence, Rome, and Naples. Though from their more southerly situation, their mere

temperature must be considerably higher, yet the necessary circumstances being wanting, they are unadmissible residences. The neighbourhood of the Apennines is here the unhappy circumstance. The mistral is known, in the northern parts of Italy, under the name of Maestro, and often prevails. It may be proper to mention, that the maestro of Naples is a different wind. We find it here synonymous with the Maestro-Ponente, or Levanto Sirocco. This wind is well known to come from the east, and the deserts of Asia. It frequently prevails all over the Mediterranean: but wherever it occurs, it is always soft and warm, and can never harm the consumptive. Snow and ice are no uncommon visitors in the cities just mentioned.

We have as yet said nothing of Pisa and Nice in the north of Italy; nor of Hières, in the south of France. These are the spots to which most invalids now betake themselves; and their real and comparative merit is an interesting enquiry.

"Nice," says Dr. Southey, "is in the neighbourhood of high mountains, and ought therefore to be avoided." This idea, and mode of reasoning, are, at present, very common. They only furnish, however, another proof of the erroneous views which are generally adopted on this subject. Nice is further north than Marseilles; and it is true, that it is not above eight or ten miles from perpetual snows. Marseilles and Aix, on the other hand, are far removed; from them the mountains can hardly be discovered. There is no one, however, who has resided in these several places, but knows the immense difference between them. Whence does this arise? The very circumstance which is generally regarded as the grand objection to Nice, is, in truth, the one to which it owes all its celebrity. It is near mountains, and is sheltered by them. The town is situated in a large and beautiful bay. This bay is surrounded by a noble amphitheatre of stupendous hills, the last of the maritime Alps. The amphitheatre is lofty, extensive, and irregular. The winds in the higher regions are violent. It is recorded of the mistral, that occasionally it sweeps men, cattle, every thing from the roads, and precipitates them into chasms and glens. This happens, however, only near the summit. It is a proof how much the winds are impeded and opposed in their progress. As they approach each succeeding range, they sweep over its brow, but never reach the vallies. The same observations may be made with regard to almost every other place which is mentioned, as a favourable residence. The principal objection to Nice is, that though sheltered, the shelter is not complete. The winds, though mixed with many a current, generated in the vallies of the hills, by the strong rays of the sun, and very

different from the pure mistral, are occasionally cold. Hence ice is sometimes seen in the northern exposures. During the months of November and December, 1817, the range of the thermometer extended from 38 to 69 degrees. At no period during the winter did it descend below 38 degrees.

Statements nearly similar may be made of Pisa. This situation is generally compared with the last; and they are commonly allowed nearly equal merits; if there be any difference, Pisa has, perhaps, the preference. During the months of November and December, 1816, the range of the thermometer extended from 42 to 62 degrees. From these kind of statements, however accurate, little can be learned. Although those which we have produced were made under exactly similar circumstances, yet, as they were made in different years, all propriety of comparison is wanting. Pisa is, like Nice, liable to mixed cold winds: an excellent artificial climate, however, may be found for invalids. It is formed by a row of buildings nearly a mile long, extending along the northern bank of the Arno. Here the sun shines all day long; and except when the wind is from the east, cold is never felt. The quay also, between the houses and the river, affords a sheltered and sunny drive or promenade. Nor are artificial sheltered spots wanting at Nice. The principal ornament of the city is the terrace. This is a walk formed on the top of the embankment raised against the inroads of the sea. It extends along the whole south front of the town, which defended it from the north, as Mount Alban no less effectually protects it from the east. It is fully exposed to the glowing south, and has a noble prospect. Some houses may be selected that are never exposed to the north or east wind. At these places, however, it is the *campagne* and not the town, that for good reasons is generally preferred. In making selection of a residence, regard ought to be had to position. It should still be on the sunny side of the hill, and defended as much as possible from the obnoxious blasts. The immediate vicinity of the river, for very evident reasons, should also be avoided.

After objecting to Nice, Dr. Southey recommends Hières. He says nothing of Pisa. The climate of Hières is good. In comparing tables kept at this place in the winter of 1817-18, with others kept at Nice, we found, that so far as temperature was concerned, there is no great difference between them. Hières is more exposed than the two situations last mentioned, and is more liable to be visited by the mistral. A much greater degree of humidity is shewn by the tables to exist at Hières. There was here no rain-gage; but we imagine double the quan-

tity of rain must have fallen. These circumstances depreciate the value of the spot. Indeed, from all that we have heard, we should not put this place on a level with those just alluded to. The opinion of the celebrated M. Thomas, director of the French Academy, seems to have been confirmed by subsequent experience. Writing from Nice to Mad. Necker, he remarks, "Après avoir balancé long temps sur le climat que je préfererois pour mon hiver, j'ai choisi le plus agréable et le plus doux:" and again, "Voila le sejour que j'habite, il est infinement préférable à celui d'Hyères."

Of Malta, from our own experience, we know nothing. Dr. Young states, that he conceives it not quite so agreeable a residence as Madeira.

With regard to the places, of which we have been last speaking, we may remark, that we are acquainted with a gentleman now in excellent health, who, after losing nearly all his relations in consumption, betook himself to the Mediterranean, and has now for many years been residing on its shores. He has spent a winter in most of the places we have mentioned; and his observation was, that in none of them could you find spots more sheltered than at Nice; in none could you at all times procure such a rich variety of flowers, and abundance of vegetables.

We have as yet said nothing of Spain. The south and southeast are the best parts of it. In a style truly laconic, Dr. Southey remarks: "Valencia is the particular spot I should select in preference to all others." He would have performed a more useful service to the profession, had he favoured us with the grounds of his preference. From what we have heard, though its character be excellent, we should judge it inferior to Pisa and Nice. It is situated in an extensive valley, about sixty miles in compass. In coasting along the shores of Spain, in the month of June, we observed snow-capt mountains on either side of it. Those on the north are at a distance which frequently affects, but does not benefit. The city is not well defended from them. We have heard a very high character from some who have passed a few months in its environs; while, on the other hand, a most respectable servant of the British Government, long familiarly acquainted with it, writes, "I have felt very severe winters in Valencia."

Malaga, we believe, is decidedly a superior spot. It is at no great distance from the Grenada mountains; but it is sheltered. The wind occasionally blows severe; but it is of short continuance. The sun is always powerful; and in its rays the breeze may be either borne or avoided. The inhabitants of Barbary

imagine this spot to be the residence of the blest spirits of their fathers. Another invalid, who has long been seeking, and we may add, finding health, and who has resided at most of the places we have passed under review, gives Malaga the preference. He places Malaga first, then Pisa, and then Nice.

But unfortunately, climate is not the only thing to be considered in reference to Spain. The acquaintance of its inhabitants with strangers is limited; their notions are confined, and occasionally lead to the most unpleasant incidents. We, on the other hand, are not familiar with their language and customs. Travelling is abominable. It resembles the moving of a caravan. You must furnish yourself with provision, bedding, guards. The inns are miserable, cold, and dirty. At Valencia, a house may be easily obtained; but it is unfurnished, and the comforts to which Englishmen are accustomed cannot easily be procured. Malaga is still more destitute; many even of its inhabitants procuring their luxuries from London and Hamburgh. The chance of being suitably accommodated, in either place, is small.

We believe we only state the sentiments generally entertained by the medical men, who have resided at the places of resort last mentioned, when we say, that they feel well contented and satisfied with the marked superiority of climate. It may not be all that they could wish, but it is very much preferable to our own. Hières, we say, is good; Nice and Pisa still better; and, climate alone considered, Malaga better still.

In directing his patients abroad, the physician ought to take some other circumstances into consideration. Is the invalid to proceed by sea or land? All the places mentioned can, without much difficulty, be reached by sea. If land be preferred, then, to say nothing of Spain, a journey to Pisa is considerably more arduous than one either to Nice or Hières. In going to the first, the high Alps must be crossed by mount Cenis or the Semplon, and that, at most seasons of the year, not without hazard.

From what has been said, it may be seen, that there is no place now known in Europe which is not occasionally liable to a cooler breeze than we might wish for our patient. We need not mention that objections still stronger exist against countries farther south. In all those of which we have spoken, it is the wind from the mountains that produces the mischief. We feel happy then, in being able to state, that we have yet to speak of another spot, not generally known, but which, we believe, will afford greater shelter than any which has received attention. We allude to Villa Franca, a town at no great distance from Nice; once great

and flourishing, but now containing not more than 2000 inhabitants. The harbour is one of the finest in the Mediterranean, and was formerly the great naval arsenal of the king of Sardinia. The bay is one of those graceful sweeps which skirt the shores of the Mediterranean from Hières to the gulph of Genoa. It is properly a bay in the more extensive bay of Nice. It is a very deep one, formed by the abrupt termination of the mountains, which project into the sea on either side, and form bold promentaries. The town is situated on its western side. It is deserted, poor and miserable. It is to its *Campagne*, therefore, that our remarks apply.

The observations which we have made on the valley of Nice, may be applied to Villa Franca; with this difference, that here every thing is very much in miniature. The amphitheatre is smaller, and infinitely more steep. The last tier of mountains is especially precipitous. Springing abruptly from the shore, they rise, generally, on an angle of about 45 degrees: the houses are built wherever a little flat ledge is left. When elevated one or two hundred feet above the level of the sea, you may not be further from it in horizontal distance. The hills continue to rise above the houses in the same sudden manner. On the west, north, and north-east they attain an elevation of 4 or 5, or even 600 feet. On the east the amphitheatre is less complete: the elevation is not great, and consequently the recess is, on this side, a little exposed. The shelter, however, afforded in the other directions, is all that could be wished. The bay lies directly north and south, and the *Campagne* is freely exposed to the sun. It is not easy in words to convey an idea of this truly singular spot. Its character was happily expressed by one, who said it put him in mind of the depredations committed at the bottom of a plumb-cake, by the thieving mouse. An idea of the completeness of the shelter may be formed from an occurrence which was the result of accident. Wishing to make accurate meteorological observations on the spot, one of the most exposed points in the premises was selected for fixing the vane; but it remained either altogether uninfluenced, or turned solely in one direction. The wind was never felt excepting from the south and south-east. The shipping in the bay afforded an opportunity of judging of the winds. Their streamers never floated, except to breezes from the south and south-east. The bay was always smooth and calm, and never was any thing seen upon its surface beyond a gentle ripple. Hanging gardens adorn the lower ranges of hills with a rich clothing. They are covered with the olive and carrubea, the fig, the

almond, and the orange tree. The soil is remarkably luxuriant. At a time when the Continent was debarred from foreign intercourse, the sugar cane was here cultivated with success; and had the war continued, the proprietor found it succeed so well, that he intended to continue its growth on a more extensive scale.

This description and detail affords much ground for supposing that the climate must be very superior. The opinion, however, need not rest on doubtful evidence. Accurate tables were kept at this place and at Nice, for the sake of comparison; and, it was found, that, during the winter months, Villa Franca had an advantage in the average minimum, at the average taken at the coldest times in the twenty-four hours, of six degrees. This difference is immense, but only corresponds with the superiority of natural advantages.

Though the ascent be so precipitous, there is no want of free space for exercise. The inhabitants have cut mule-paths in every direction, at different elevations, extending round the amphitheatre. The invalid may skirt along the sea shore, and listen to its murmurs, with no other screen between, than a hedge of blossoming myrtle. He may make his round at an elevation of 100 feet, and feast his mind with the varied and enchanting prospect. He may mount still higher, and under the shelter of the olive, lose himself in ever new and ever varying paths. He may mount his mule, trust to its safe guidance at every elevation, and promenade at every terrace. He may extend his ride to the great roads in the neighbourhood, or vary his occupation, and spend many a pleasing and health-renewing hour on the calm lake beneath, where the breeze is never felt, and no wave is ever seen. This romantic spot is not unknown on the Continent, as a very superior residence. At Montpellier, a celebrated physician described it to us as the first in Europe. He had derived his information from a Russian Prince, to whom it had been strongly recommended, and whose hopes had not been disappointed. From what we have seen, we should give it a similar character, and a decided preference. Though the town is too poor to furnish comforts, yet every luxury may be abundantly and daily procured from Nice. We know only one objection which would, at present, prevent the situation from becoming a place of great resort. The number of country houses is small, and most of them are not commodious. This, however, is a fault which could soon be remedied; whilst its advantages are lasting, and, we imagine, of the highest order.

An objection is frequently brought against emigrating abroad, from the difficulty of avoiding the great heat of summer. A

little investigation would supply a ready remedy for this. The celebrated Bishop Berkeley, in writing to Mr. Pope, mentions, that one of the pleasantest as well as happiest of his summers, was spent in the small island of Inarine, in the bay of Naples. The air, says he, in the hottest season, is constantly refreshed by cool breezes from the sea.

We have seen the climate of Crete thus described. The climate of Crete is delightful in the highest degree. Its winter of two months resembles the May of England, and the April of Italy. The rest of the year is a continued succession of fine days and brilliant nights. In the day, the sky is cloudless; in the night, a countless profusion of stars, whose astonishing brilliancy is seldom obscured by vapors, renders the season of repose more beautiful than the glories of the day. We need not ask if all this be true. Let us not, however, be satisfied till such a spot be found. Many a patient will need it—many will thank us for it.

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Art. V. *Lehre von den Augenkrankheiten, als Leitfaden zu seinen öffentlichen Vorlesungen entworfen von G. Joseph Beer.* Zwey Bände, 8vo. Wien, 1813 und 1817. Mit 9 Kupfertafeln. Heubner and Volke.

*The Doctrine of Eye-Diseases, drawn up as a Guide to his Public Lectures. By G. Joseph Beer.* 2 vols. 8vo. with 9 plates. pp. 1367. Vienna, 1813 and 1817. Heubner and Volke.

Although the present work is announced as nothing more than a guide to the public lectures of the author, on the diseases of the eye, it contains the principal results of Professor Beer's thirty years' experience in the treatment of these diseases, arranged in systematic order; and we have no hesitation in delivering our opinion, in the words of Mr. Wardrop—that this "is certainly the most complete work on this subject which has appeared in any country."

The work is divided into five parts. The first treats of the Inflammatory Diseases of the Eye: the second, of the Diseases consequent to Inflammation: the third, of Cataract: the fourth, of Amaurosis: and the fifth, of such Diseases as do not fall under any of the former parts.

In treating of the Inflammatory Diseases, Professor Beer considers first of all the ordinary affections of that kind to which the eyelids, the lachrymal organs, and the eyeball, are subject;

and then passes to those inflammatory diseases of the same parts, which arise from small-pox, measles, scarlet fever, syphilis, psora, gout, scrofula, and scurvy. Our readers may form some idea of the precise diagnosis established by this author between the different inflammatory diseases of the eye, from the following outline of the symptoms of a few of those which attack the eyeball, and which are unmixed, so far as their origin is concerned, with any constitutional affection.

In the first place, there are certain inflammations which have their seat in the conjunctiva, and which are easily distinguishable both from each other, and from the ophthalmiae which attack the deeply-seated parts. There is, for instance, an erysipelatous inflammation of the conjunctiva, constituting one of the slightest kinds of ophthalmia. In this disease, the conjunctiva assumes a pale red colour, and elevates itself in yellowish-red vesications round the cornea, while blood is extravasated here and there into the cellular substance which binds the conjunctiva to the sclerotica. As the disease subsides, the detached conjunctiva reapproaches the sclerotica, and the redness gradually fades. On the other hand, the conjunctiva is exposed to a very dangerous inflammation as a mucous membrane, namely, to ophthalmoblenorrhœa, in which one of the chief symptoms is an increased and puriform secretion from the surface of the tunic. The sclerotica, being of a very different structure from the conjunctiva, presents very different phenomena when it becomes the focus of ophthalmia; as it is extremely apt to do, both from the causes which excite rheumatism in other parts of the fibrous system, and also from even slight mechanical injuries. It is difficult, indeed, at any period of a sclerotitis, to confound it with either of the above-mentioned species of conjunctivitis. The blood-vessels of an inflamed conjunctiva are evident to the eye of the observer at a considerable distance; they are of a scarlet-red colour, many of them are exceedingly tortuous, they have a tendency to fill equally every part of the conjunctiva, and to ramify and anastomosis through it in every direction, and with no particular or distinct arrangement; in the motions of the eyeball they seem but little to participate, whereas if by means of the finger we move the eyelids in different directions, we see the blood-vessels of the conjunctiva following the motions which we give to the eyelid. The blood-vessels of the inflamed sclerotica, on the other hand, are of the smallest diameter; from their deep situation and their fineness they are not evident except on near inspection, they are of a carmine or rose-red colour, they constantly incline to appear in the form of a zone around the cornea, they follow all the motions of the eyeball, but take no part in the motions of

the conjunctiva produced by drawing the eyelids to this or to that side. As the inflammation of the sclerotica advances, the effusion of serous fluid takes place upon its surface, which occasions chemosis; and the cornea taking part in the disease becomes cloudy. The pain and pulsation felt in the eye are distressing. Points of suppuration form in the conjunctiva, and not unfrequently the cornea ulcerates and bursts. Inflammation of the iris is characterised by symptoms as striking as those of any of the other species of ophthalmia, but which we need not here detail, having entered at some length into the consideration of that disease in our first number.

All these distinctions are of the utmost importance in regard to the treatment. The erysipelatous inflammation of the conjunctiva never need alarm us, nor does it require any severe depletory means. Sclerotitis, on the other hand, almost ever demands bleeding from the arm, followed by the application of leeches to the temples as soon as the patient has recovered a little from the venesection. Ophthalmoblenorrhœa is to be treated partly by constitutional remedies, and above all by purgatives; partly by such local applications as may restore the secretion of the conjunctiva to its natural quantity and quality. Closure of the pupil and effusion of coagulable lymph from the iris, are the dangers which we have to combat in iritis, by means of belladonna externally, and mercury internally employed.

Perhaps so many as ninety cases of ophthalmia in children out of the hundred, are strumous. Many other also of the diseases of the eye are of a strumous origin, or are at least modified by scrofula. Hence it is that no one can avoid directing his attention particularly to the nature and treatment of this disease, who busies himself with the diseases of the eye, and who is not a mere charlatan, equally ignorant and presumptuous. Scrofula, in the hands of the latest and best of our English authors, is a subject of great confusion and contradiction. Symptoms are enumerated by them as indicative of this disease, which appear directly opposite to each other; and methods of cure equally incompatible are frequently recommended. In order to speak with any kind of accuracy of the effects of scorfula upon the eye, Professor Beer has found it necessary to distinguish different classes of scrofulous patients.

To the *first* and most numerous class belong those lifeless, sluggish individuals, the texture of whose bodies throughout is extremely lax and doughy, who lead more a vegetative than an animal life, who scarcely know either joy or sorrow, who will sit for half a day upon a single spot, and whom we see staring upon the objects around them without seeming to receive the

same impressions as ordinary persons. The individuals of this class during childhood have generally a broad double chin, their nose and upper lip are almost constantly swoln and scurfy, and their abdomen is uncommonly large and distended. This class become affected with enormous swellings of the lymphatic glands, disorganizing diseases of the bones, and eruptions on the skin, especially with crusta lactea and tinea capitis. They are particularly subject to inflammation of the Meibomian glands; and when labouring under this, the slightest cause frequently calls forth a blenorrhœa of the eyelids, or even a true ophthalmoblenorrhœa. Females of this class not unfrequently labour even from childhood under fluor albus.

The *second* class includes a set of individuals who are in many respects directly opposed to the former. Those who belong to this class are extremely lively, very irritable both in their physical and in their moral constitution, their passions are in general uncommonly keen, they quickly grow up from childhood to their full growth, they manifest an uncommon degree of curiosity and desire for knowledge, and an understanding much beyond their years. Common observation remarks, and too often with truth, that such individuals when children are too clever, and that they will never be old men. Even when they happily arrive at the years of manhood, they generally grow old before their time, unless by chance or from discreet advice they are led to embrace a very cautious plan of life. This class are much more liable to acute inflammatory diseases, especially of the serous membranes, than to the mucous profluviæ. It is most frequently a mere superficial inflammation of the eyeball which presents itself in this class; and should they become affected with an inflammation of the Meibomian glands, it must indeed be severe to degenerate into a blenorrhœa of the eyelids, or into an ophthalmoblenorrhœa. A *third* class of scrofulous patients is mentioned by Professor Beer, who stand between the two other classes, and approach more or less to the one or to the other.

In regard to the manner of life in general of the *first* class, Professor Beer observes, that every thing ought to be carefully avoided which tends to support merely the vegetative or organic process of life, and on the contrary, every means ought to be employed which is likely to call into action that kind of existence which really deserves the name of animal. The children of this class ought more than all other children to have daily exercise till they are fatigued, in the open air, let the weather be warm or cold. At home they ought to have an uninterrupted employment of the body, for this, along with a certain exercise of the mind, is indispensable to their cure. Long-continued

sleep is extremely hurtful to them. It makes them more and more sluggish and stupid. Even as hurtful to this class, is all food difficult of digestion; such as pudding, fat dishes, and farinaceous vegetables. On the other hand, such patients derive the greatest advantage from the use of a good flesh diet, and even from the use, though still very moderate use, of spirituous liquors. Along with this plan of diet, the employment of the warm bath is indispensable. After its use, the patient always feels livelier, and at last it becomes necessary to his comfort.

In patients of the *second* class, the great object is to bring the overpoising activity of the animal life within due bounds, and to call forth, in a greater degree, those processes of vitality which may not unaptly be called vegetative or organic. Children of this class, though they ought to live in a free and pure atmosphere, ought to be carefully guarded from excessive exercise of the body. Those around them ought carefully to avoid whatever might nourish that passionate and morbid interest which such patients feel in whatever passes within the sphere of their observation, and to give such a direction to their insatiable curiosity as may have a favourable effect upon both their mind and body. Their food ought to be extremely nourishing; but at the same time easily digested, and given at regular intervals, so that their stomach is never overfilled. Milk, rice, and the like are excellent articles of diet for this class. Fatty and acid kinds of food are prejudicial; and, least of all, ought we to permit them the use of beer, spirituous liquors, or wine, unless when they are extremely reduced in strength. As the interruption of their accustomed long sleep is very serviceable for the former class, such interruption is very hurtful to this class, the individuals of which can scarcely ever be said to sleep too long. The warm bath is not so proper for this class as for the former. It ought to be but seldom employed, and not too warm.

Without wasting our readers' time, in shewing that this classification of scrofulous patients is important, and yet caricatured, let us see under what different appearances conjunctivitis usually manifests itself in these two classes. In both classes, this disease is pustular or phlyctenulous; but, in patients of the first class, it has a much more tedious course than in those of the second.

At the commencement of this disease, a scattered redness is observed in the conjunctiva of the eyeball, arising from blood-vessels which are constantly becoming more and more evident, and which are seen to run in bundles from the circumference

of the eyeball towards the cornea, some of them even passing over the edge of the cornea towards its centre. The greater number of these bundles of vessels terminate at the edge of the cornea, and some of them even before they reach the cornea. Such are the symptoms of the first or merely inflammatory stage, which rarely, indeed, falls under the observation of the surgeon, so quickly do the phenomena of the second stage succeed. In this stage, the bundles of vessels become more evident. The sclerotica appears somewhat reddish. What forms one of the most characteristic symptoms of the disease is, that at the apex of each of the bundles arises a little pustule or phlyctenula, which soon bursts, and becomes a small ulcer. If one or more of these ulcers be situated on the cornea, and the case be neglected, a completely opake cicatrice will be the consequence, and this will considerably impede vision.

In the patients of the *first* class, there almost constantly forms several pustules at the apex of each bundle of blood-vessels. According to the length of these bundles, the pustules have their seat over the sclerotica, or upon the cornea. They soon burst, and form round and deep funnel-shaped ulcers. These ulcers increase both in circumference and in depth. They become surrounded by a reddish, soft, and easily bleeding edge. Very frequently they penetrate through the laminæ of the cornea into the anterior chamber. A little fistulous opening of the cornea is thus formed, and through this a portion of the iris protrudes. This protruding portion of the iris unites firmly by adhesive inflammation to the edges of the opening through the cornea; the ulcer afterwards gradually contracts, the protruding iris is covered by granulations, and a white cicatrice impedes or entirely prevents vision. If several pustules form in the cornea at the same time, it sometimes happens, that they unite with each other before they burst, the purulent matter is infiltrated between the laminæ, and thus a kind of onyx is formed. It is important to remark, that in patients of the first class, this inflammation is seldom attended with any very considerable intolerance of light, with great pain, or with long-continued spasmodic contraction of the eyelids, but more frequently with an inflammation of the Meibomian glands. Very rarely does this disease in patients of the first class pass into an iritis, even though it be neglected.

In patients of the *second* class, there forms at the apex of each vascular bundle, what may be called rather a phlyctenula than a pustule. This phlyctenula soon bursts, and an ulcer follows, which is ichorous, superficial, constantly increasing in

circumference, surrounded by a jagged edge, and semi-transparent. It sometimes happens, that, in consequence of such an ulcer attacking the cornea more deeply than usual, its innermost lamina only, or even merely the serous membrane which lines the cornea, remains entire. That lamina or membrane being unable to withstand the pressure of the aqueous humour, is gradually protruded, somewhat in the form of a vesicle, forming what is called a hernia of the cornea. One of the most striking symptoms of the scrofulous inflammation of the conjunctiva in the patients of the second class, is the exceeding intolerance of light. And, connected with this symptom is the spasmodic contraction of the eyelids. This contraction sometimes remains almost constant for days, nay, for whole weeks; the eyelids are never opened by the patient, not even for an instant, during all that time; and, if we endeavour to open them by force, there springs out from between the eyelids, a quantity of almost burning tears. In some cases, this intolerance of light, and these spasms of the eyelids are not so violent nor so constant; but in all the patients of the second class these symptoms, in a greater or less degree, are amongst the most characteristic of the disease, and cannot escape attention. The patients, in every case, complain of pain, and sometimes the spasm returns with such violence after an intermission, and acts so strongly upon the eyeball, that the patient suddenly, even during sleep, shrieks aloud, and awaking, calls for help. Occasionally, the inflammation spreads to the iris, and, in this case, it may very readily happen, that the foundation is laid for a future total staphyloma of the cornea. If, at the beginning of this inflammation, in the second class of patients, a very great number of blood vessels spread from all sides, and pass over the edge of the cornea towards its centre, then no phlyctenulæ form, but the cornea becomes brownish-red; the conjunctiva of the cornea becomes thickened, and, in some degree, detached; the conjunctiva covering the sclerotica, becomes not unlike a thin muscle in appearance; it is so thick as to hide the sclerotica from our view. In some cases, we can no longer discern the edge of the cornea, but the whole surface of the eyeball is like a piece of thin reddish cloth. This state is what is termed pannus.

No part of the present work appears more worthy of praise than that which treats of the diseases of the lachrymal apparatus, and particularly of the excretory parts of these organs. Instead of confounding, under the misguiding name of fistula lachrymalis, a great number of different affections, some of

which are spoken of by this name, apparently only because they present no fistula, nor any thing like it, Professor Beer first of all describes in separate chapters, the following diseases:— 1. Erysipelatous Inflammation of the Parts covering the Lachrymal Sac. 2. Idiopathic Inflammation of the Lachrymal Sac. 3. Scrofulous Blenorrhœa of the Lachrymal Sac: and then under the head of diseases consequent to inflammation, he considers the following:—4. Stillicidium Lachrymarum. 5. Hernia of the Lachrymal Sac. 6. Hydrops of the Lachrymal Sac.

Obstruction of the nasal duct appears to be almost the only circumstance in lachrymal diseases, against which the treatment recommended by the surgeons of France and England has been directed. "On sait qu'au rétrécissement ou à l'oblitération du "canal nasal, produits par une cause quelconque, est due, dans "presque tous les cas, la maladie qui nous occupe; soit que, "restées intactes, les parois du sac présentent une tumeur "lacrymale, d'où les larmes refluent continuellement sur les "joues, à travers les points lacrymaux: soit qu'en partie "détruites et ulcérées, ces parois présentent une fistule qui "offre aux larmes un passage contre nature, sans cesse entre-"tenu par elles; en sorte que ces deux états, la tumeur et la "fistule, sont presque toujours des degrés différens d'une même "affection, et que le traitement qui convient à l'une répose sur "les mêmes bases que celui indiqué dans l'autre."* It is evident, from the writings of Pott and Ware, that even these authors considered the obstruction of the nasal duct as the foundation of all the train of varied symptoms presented by the excreting lachrymal organs. "An obstruction in the nasal "duct is most frequently the primary and original cause of the "complaint."—"The seat of this disease is the same in "almost every subject," says Mr. Pott;† and Mr. Ware sets out in his Observations on the same disease, with the same assumption.

Now, obstruction of the nasal duct is an occasional consequence merely of inflammation of the excreting lachrymal organs; in most of the diseases of these organs, obstruction of the nasal duct has no part; and one might, with as much propriety, treat all the affections of the bladder and urethra, by the dilatation of the latter part, as treat all the diseases of the excreting lachrymal organs, by dilating the nasal duct. The

* Œuvres Chirurgicales de Desault, Tome II. page 120.

† Observations on the Fistula Lachrymalis.

false assumption in question has led to most erroneous treatment. For instance, in blenorrhœa of the sac, and in hernia of the sac, though in both these diseases the nasal duct is patent, the common treatment in this country is to open the sac by the knife, and thrust down a style or some other instrument into the nose; thus destroying the organization of the parts, which are affected merely with a gleety secretion in the one case, and with extreme relaxation in the other. Suppose that some charlatan should make oath at the Mansion-house, that he had cured fifty or a hundred cases of gonorrhœa in a new method, and that this new method was found to consist in opening the urethra in the perinæum, and passing a bougie through that tube from behind forwards, who would approve of such an operation? Yet the laying open of the lachrymal sac, and thrusting a probe down into the nose, when the nasal duct is either perfectly patent, or at the most slightly tumid from inflammation, is neither less preposterous nor less cruel.

The diseases described by Professor Beer, under the names of hernia and hydrops of the lachrymal sac, are not discriminated by surgical authors in this country, although they are characterised by widely different symptoms, and require opposite methods of treatment. The lachrymal sac in the state of hernia forms a tumour, which never surpasses the size of a common horse-bean, the integuments are of their natural colour, the tumour is soft and yielding to pressure, which readily evacuates the contents of the sac by the puncta, or by the nasal duct. Hydrops grows to the size of a pigeon's egg, is purplish from the beginning, hard as a pebble, and incapable of being evacuated by the strongest pressure. Hernia is cured by compression, and the application of astringents to the relaxed parts; hydrops requires the incision of the sac. In hernia, the nasal duct is natural; in hydrops, it is obstructed. Hernia is treated in England by the style; and cases of the happy extirpation of a cancerous tumour in the inner corner of the eye, may be found in the books of the oculists, which were nothing else than the extirpation of the lachrymal sac in the state of hydrops!

Under the head of Diseases consequent to Inflammation, is included, as may readily be conceived, a great number of morbid changes. Among these, Luscitas, Staphyloma, and Varicosity will be found to be described by Professor Beer, with great accuracy, and with the detail of several interesting circumstances which had formerly escaped observation.

Total staphyloma of the cornea, (for our limits permit us to

touch upon it only), presents two varieties, very different in their external appearances and in their internal structure. In the *spherical* variety, the tumour of the cornea goes on constantly increasing in size, and becomes, at the same time, ever more and more extenuated. In the *conical* variety, the tumour never increases to any considerable projection, but remains unchanged after it has once formed. The pathological anatomy of these two varieties, shews the iris and cornea firmly united by adhesive inflammation in the spherical, so that the anterior chamber is abolished; but, in the conical staphyloma, both chambers are destroyed, by the crystalline capsule, the iris, and the cornea being all three matted together from the same cause. The progress of the spherical staphyloma has led Professor Beer to a conclusion, which has been adopted from other considerations by some very ingenious physiologists, namely, that the chief seat of the secretion of the aqueous humour is the posterior chamber, and that of its absorption the anterior; for, in the spherical staphyloma, the anterior chamber being destroyed while the posterior remains entire, the secretion of the aqueous humour evidently overbalances its absorption, which ought not to be the case, if the secretion and absorption of that fluid were carried on equally by every part of the parietes of the aqueous chambers.

Under the head of closure of the pupil, Professor Beer considers the three chief methods of forming an artificial pupil—incision, excision, and separation; distinguishing them by the names of corotomia, corectomia, and corodialysis. In 1804, as we learn from another work of the learned Professor,* he had operated thirteen times successfully by the method of incision; performed with a double edged lancet, of about the eighth of an inch in breadth, introduced through the upper part of the cornea. As to excision, Professor Beer was the first materially to improve this operation; for, in 1797, we find him operating with a cataract knife, a hook, and a pair of scissors, instead of following the method of Wenzel. In 1804, he had operated thirty-two times successfully in the following manner:—An incision, close to the edge of the cornea, and not larger than the third part of its circumference, being made with a cataract knife, the iris, if it protrudes, is laid hold of with the hook, or if no protrusion takes place, the hook introduced by the wound, lays hold of the pupillary edge of the iris,

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* Ansicht der staphylomatösen Metamorphosen des Auges und der Künstlichen Pupillenbildung. See also Assalini-Ricerche sulle Pupille Artificiali.

which is then to be dragged out by the wound, and a sufficient portion of it cut away with the scissors. We know of no essential improvement which has been made in the operation of excision, since it was thus performed by Professor Beer, in 1797, nor does it seem capable of farther improvement. Professor Beer shortly notices Dr. Reisinger's method of performing the operation of separation, with a double hook, or hook-forceps; but, with his usual caution, he has paused for somewhat greater experience, before pronouncing his full opinion of its merits. Since the publication of the present work, Professor Beer has published a very interesting paper in the Austrian medical *Jahrbuch*, in which he relates a number of cases in which he had successfully employed the method of Dr. Reisinger.

Professor Beer divides the various kinds of cataract into two classes—the true and the spurious. By a *true* cataract, is meant such an obstacle to vision, as has its seat in or within the crystalline capsule. By a *spurious* cataract, is meant an obstacle to vision, which has its seat between the anterior hemisphere of the crystalline capsule and the iris. The principal kinds of cataract are described in the following order:—1. Lenticular. 2. Anterior Capsular. 3. Posterior Capsular. 4. Morgagnian. 5. Capsulo-Lenticular. 6. Cystic. 7. Siliquous. 8. Cataract combined with a cyst containing pus. 9. Trabecular. 10. Lymphatic. 11. Purulent. 12. Sanguineous. 13. Pigmentous. The last four species are spurious, and consist in some new or displaced substance, lodged within the verge of the pupil.

In describing the different species of this important disease, Professor Beer takes no notice of the driveling apologies of those, who being either too indolent to study the minute appearances which must be observed in eye-diseases, or too dull to perceive the differences presented in different cases, either practise experimental operations, by which they may discover the hardness of the cataract, or hardily make trial of extraction, or of depression, or of division, in every case, let the consistence and appearances and seat of the cataract be what they may. Under each species, Professor Beer mentions such symptoms as are sufficient to indicate with certainty, in every case, the seat, the size, and the consistence of the cataract. Two of the chief marks of the size of the cataract are derived from the state of the posterior chamber, and the mobility of the iris. If the lens in an opake state still preserve the size which it had when transparent, there is a very evident shadow thrown back upon the surface of the cataract by the iris. If the cataract be less

than the natural lens; this shadow is broader than usual. If the opake lens be swoln, no shadow is present, as the capsule is pushed forwards into contact with the iris, and the posterior chamber is abolished. The motions also of the iris are in this case rendered slow, or are altogether impeded. A hard cataract is always small, though every small cataract be not hard. The darker, and at the same time, the more uniform the grayish opacity of the cataract, the more hard it is; whereas, a cataract which is large, and at the same time cloudy or white, is always soft.

The superior accuracy of Professor Beer's descriptions of the different kinds of cataract, appears to be owing, in a great measure, to the methodical manner in which he has long been accustomed to examine the individual cases which have come under his observation. How often do we see the pretended oculist give a glance or two into an eye, and then exclaim, in a self-complimentary tone, that there can be no doubt that the disease is a cataract; thus terminating his scanty investigation, and vain of his miserable diagnosis! In examining a case of cataract, the opacity ought first of all to be regarded. Its colour, its extent, its form, its seat, ought to be carefully marked. Is it grayish or chalky? Is it uniform, or speckled? Does it occupy the whole field of the pupil, or the centre merely, or the edge merely of that field? Is it plane, or convex, or concave? Is it close to the iris, or remote from it? Does it reside in the posterior chamber, or in the anterior hemisphere of the capsule, or in the Morgagnian humour, or in the lens, or in the posterior hemisphere of the capsule? The iris ought next to be examined with equal minuteness. Its colour, its form, its shadow, its motions, will require several minutes' attention. Is it discoloured from previous inflammation? Is it plane as in health; or is it convexly bolstered forwards, or has it sunk back towards the vitreous humour? Does it cast any shadow upon the cataract? Is the shadow of the usual breadth, or is it broader than usual? Has the iris any motion on varying the degree of light to which the eye is exposed? Are its motions as extensive and as rapid as in health? Has it any peculiar floating or trembling motion? The general state of the eyeball—the degree of vision—the effects of different degrees of light—the effects of belladonna applied to the eyelids—the history of the case—all these furnish a number of points, which are to be investigated with the same methodical minuteness.

As a specimen of Professor Beer's manner of describing the different species of cataract, our readers may take the following sketches of the cystic and siliquous cataracts.

The cystic cataract is always, or almost always, the consequence of a violent blow in the neighbourhood of the eye, and of concussion of that organ. The lens, inclosed in its capsule, is loosened at the time of the accident from the surrounding parts, from the vitrous humour and the hyaloid membrane, in a word, from all its vital connexions. The capsule becomes quickly opake from the action of the aqueous humour, the lens becomes opake, the lens dissolves, and the capsule becomes much thickened. The opacity presented in this disease is white, and uniform. It is very convex. The iris is pushed forwards by the cataract. The cataract is partly pushed through the pupil. But on bending the head back, the cataract retires, falling forwards again on bending the head forwards. From the effects of the concussion of the eye upon the retina, amaurosis frequently accompanies this kind of cataract. If extraction be performed in a case of cystic cataract, the lens inclosed in its capsule rolls out as soon as the section of the cornea is completed. This is one of the kinds of cataract which have received the names of *branlante* from the French, and of *tremula* and *natatilis* from Latin authors.

The siliquous cataract is the consequence of a wound or rupture of the capsule, through which the aqueous humour is admitted to the lens. In adults, this kind of cataract is usually the result of a penetrating wound; occasionally of a blow upon the eye. In children, the rupture of the capsule most frequently takes place during those violent convulsions which are so frequent in the first days after birth, and in which the muscles of the eyeball are effected with violent spasms. The opacity in children is light gray. It has its seat evidently in the anterior capsule, which is shrivelled and wrinkled. The soft lens having been completely dissolved and absorbed, the cataract is very small in size, and at a greater distance than usual from the iris. In adults, the opacity is chalky, especially where the capsule had been wounded; elsewhere, it is dusky or yellowish. The kernel of the lens usually remains in adults, while its surface and circumference have been absorbed. The opacity is flat. The shadow of the iris is broad. This is one of the kinds of cataract confounded in England under the name of congenital.

As Professor Beer is no charlatan, and has no trifling invention of his own to announce, he recommends the cure of cataract to be attempted, according to the circumstances of the case, by depression, extraction, or division; and expresses himself with much warmth against those ignorant and unprincipled men, who would persuade the public that they have improved any one of these operations, so as to operate safely and successfully in all

cases of cataract, by one method exclusively. The depression of a large cataract, the extraction of a soft one, the division of a hard one, are three surgical solecisms.

The reader will find those parts of the work which refer to the operative surgery of the eye, very minute and accurate. Such minuteness and accuracy are indeed indispensably necessary, in describing operations which are to be performed upon an organ so small as the eye, and which consists of so many and such important parts. As a specimen of the care with which the operations for cataract are described, we shall endeavour to abridge the rules laid down by Professor Beer for the performance of depression and reclination.

In depression, the cataract is pressed almost perpendicularly under the pupil by means of the needle, and to such a depth that it no longer forms an obstacle to vision. Reclination, which is the operation of Willburg, consists in pressing the cataract backwards and downwards into that part of the vitreous humour which is opposite to the interval between the external and inferior straight muscles, where it is to be left, with that surface which was anterior looking upwards, its posterior surface looking downwards, its superior edge directed backwards, and its inferior edge directed forwards. Both depression and reclination are divided into three periods. In the first period, the needle is passed through the tunics of the eye, and a little way into the vitreous humour: in the second period, the needle is introduced between the anterior circular edge of the ciliary processes and the circumference of the lens, enters the posterior chamber, and is applied to the anterior surface of the cataract: in the third period, the depression or reclination, strictly so called, is performed. In the first two periods, then, these operations are the same; they differ only in the third period.

In the *first* period, the general rule is, that the needle be so entered through the tunics, that nothing shall be injured but what must unavoidably be wounded. If this rule be not understood or not attended to, such accidents may readily happen as will prevent the remaining periods from being accomplished, or will even completely destroy the eye. What are the parts which must unavoidably be wounded in the first period? The answer is, the conjunctiva, the sclerotica, the choroidea, and the vitreous humour. What are the parts which must and can be avoided? The answer is, the ciliary processes, the retina, the long ciliary artery, and the lens. We may add, that as few of the arteries and veins of the choroidea are to be wounded as possible. If the ciliary processes, or any large

vessel be wounded, instant hæmorrhagy takes place into the chambers of the eye, if the operation be continued it must be finished as it were in the dark, and there is much danger of disorganizing inflammation. If the retina be wounded, violent vomiting follows, convulsions of the muscles of the eye, and amaurosis. If the lens be wounded in the first period, the needle sticks in its substance, and on attempting to perform the second period of the operation, the surgeon is thrown into much confusion by finding that the point of the needle does not advance into the posterior chamber. All these accidents may be avoided by employing a lance-shaped and round-necked needle,* attending to the following directions. 1. The needle is to be passed through the tunics with the one flat side directed upwards, and the other downwards. By this means, fewer vessels will be divided than if the instrument were passed with the one edge directed upwards and the other downwards. 2. In the first period of the operation the point of the needle is to be directed towards the centre of the vitreous humour. By this means, the lens will be avoided. 3. The instrument is not to be entered into the eye nearer to the edge of the cornea than the twelfth of an inch. By this means, the ciliary processes will be avoided. 4. The instrument is not to be entered into the eye farther from the edge of the cornea than the eighth of an inch. By this means, the retina will be avoided. 5. The instrument is to be entered into the eye the twelfth of an inch below its transverse diameter or equator. By this means, the long ciliary artery will be avoided.

The *second* period of the operation commences as soon as the lance-shaped part of the needle has penetrated through the tunics. This period commences by a double motion of the needle. Its handle is to be carried backwards towards the temple, and at the same time the instrument is to make a quarter-rotation upon its axis, so that one of its flat sides becomes turned towards the operator. The needle is now parallel to the iris, and its point is exactly between the circumference of the lens and the anterior circular edge of the ciliary processes. Pressing the instrument onwards, its point is seen advancing behind the temporal edge of the iris. It is to be carried on through the posterior chamber, until its point be hid behind the nasal edge of the iris. The posterior flat side of the needle is thus applied to the anterior surface of the cataract, and here the second period ends.

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* Accurate models of the eye-instruments employed by Professor Beer are in the hands of Mr. Smith, Surgeons' Instrument Maker, St. Saviour's Church-yard, Southwark.

If we have resolved upon depression, the *third* period commences by depressing the handle of the needle so that the point of the instrument is elevated to the vertex of the cataract. A quarter-rotation is now to be made of the needle on its axis, so that the flat side of the instrument is applied to the edge of the cataract. Next, the handle is to be raised, and the depression, strictly so called, performed. As soon as the instrument comes to the horizontal position, the depression is finished. If the handle be at all raised above the horizontal position, the lens is pressed upon the retina, or, as Daviel found the parts in several of his dissections†, it is pushed under the edge of the retina, which in either case is bruised and instantly rendered insensible for ever. The depression being completed, the point of the needle is to be gently raised, and the instrument withdrawn with the same manipulations by which it was introduced, only in an inverse order.

If we have resolved upon reclination, the needle is not to be moved from the position it held at the end of the second period, but we are to proceed immediately to recline the cataract. This is effected by raising the handle obliquely upwards and forwards, so that its point passes obliquely downwards and backwards. By this movement of the needle, the lens is pushed backwards into the vitreous humour and at the same time downwards, so that it comes to occupy the position already described.

We do not know any stronger proof of the backward state of the knowledge of the diseases of the eye in England, than the confused manner in which the amaurotic affections of that organ are described, and the empirical treatment which is recommended for their cure. Sometimes, we are told, the pupil is of its proper size in amaurosis, at other times dilated, at other times contracted. Sometimes the iris is capable of very free motion, at other times sluggish, at other times immoveable. Sometimes the pupil is of its natural blackness, at other times glossy and pale, at other times greenish. Sometimes bleeding and other depletory means cure amaurosis, at other times emetics, at other times galvanism, at other times mercury. One might suppose that no conclusions whatever could be drawn, neither concerning the character nor the treatment of this disease.

The fact is, that many different diseases are confounded under the name of Amaurosis. There is, for instance, a very distinct species of amaurosis which Professor Beer designates by the

† Memoires de l'Academie de Chirurgie. 12mo edit. tome v. p. 377.

name of Rheumatic Amaurosis—and he discriminates no fewer than eighteen other species by symptoms equally constant and well-marked. The rheumatic amaurosis declares itself by the following symptoms. The pupil is perfectly clear. The iris is almost immoveable. It is not greatly dilated, but is evidently displaced inwards and upwards, being nearer the nose and nearer the eyebrow than naturally. There is a flow of tears on the slightest occasion, and always more or less intolerance of light. There is frequent aching pain in the eyeball, and in the region of the eye. The motions of the eyeball are impeded, especially in one direction. The eyeball is generally turned outwards, and when the disease is completely developed it, cannot by any exertion of the patient be made to revolve inwards. A considerable weakness of the levator palpebræ superioris, or even a complete palsy of that muscle, attends this disease. This species of amaurosis rarely goes the length of complete blindness. Professor Beer has succeeded in curing the greater number of such cases completely. The treatment consists chiefly in diaphoretics. The resina guajaci and camphor, the former in the dose of two grains, the latter in that of half a grain, are given twice or thrice a day in powder, and Dover's powder at bed-time. Amongst the external remedies, vesicatories hold the chief place. They are to be applied alternately behind the ear, on the temple, and over the eyebrow, so that a succession of counter-irritations may be kept up.

The Plethoric Amaurosis, which is Professor Beer's first species, is an exceedingly well-marked disease, and one which in its early stages is completely within the power of depletory treatment. That species of amaurosis which results from chronic disorders of the digestive organs is also well marked, but much less within the influence of medicine. Both these diseases are frequently hurried on to their complete developement and to a total insensibility of the retina, by stimulants, and especially by galvanism and electricity.

In the last division of this work, the accounts of Lachrymal Tumour, of Dropsy of the Eye, and of Pterygium, will be found extremely interesting. We shall stop only to abridge the history of the symptoms of what may be called Lachrymal Tumour in the Lachrymal Gland, a disease which was first described by Professor Schmidt.

The most important symptom of this disease consists in the gradual projection of the eyeball out of the orbit and towards the nose—a symptom which is called exophthalmos, if the protruded eye presents no appearance of inflammatory disorganiza-

tion. If there be an inflammatory disorganization of the whole globe of the eye along with the protrusion, this symptom is termed exophthalmia.

When this disease is attended with exophthalmos, it presents the following appearances. The patient complains of an obtuse and deep-seated pain in the orbit; and every patient when he speaks of this pain, expresses himself nearly in the same terms; he says, the pain is as if something behind the eyeball were pushing it out of its socket. The pain is felt most distinctly when the patient moves his eye in different directions, and especially when he turns it towards the temple. Day after day the pain increases, although nothing unnatural is seen in the eye. The patient soon begins to complain of a feeling of tension in that side of the head to which the eye belongs. The eyeball is now seen to be evidently projecting somewhat from the orbit, and towards the nose. The patient complains of a feeling of dryness in the eye. He cannot move it without very great aggravation of the pain, and the sensation of flashes of light in the eye. At last, he is totally deprived of the power of moving it. When he regards the objects around him with this eye, he sees them distorted. If he opens at the same time the sound eye, he sees them double. The more that the lachrymal tumour pushes the eyeball out of the orbit, vision becomes the weaker and the more disturbed, the more burdensome becomes the want of sleep, the more striking the want of appetite, the more violent and at last uninterrupted through day and night the hemicrania. The eye is now completely blind. It projects so much from the orbit as to rest in some measure upon the cheek. The eyelids lose all power of motion. The eyeball becomes sullied and dusky. Every day it looks more like an eye which is dead. When the symptoms have reached this point, the resisting hardness of the lachrymal tumour is distinctly felt between the protruded eyeball and the temporal edge of the orbit.

When this disease is combined with exophthalmia, there is pain in the eyeball itself, and whereas in the former case, the eye, though protruded, preserved its ordinary size, in this case it is rapidly enlarged and so destroyed by inflammation that its organization can no longer be recognized. It passes into suppuration, and unless it be opened by the knife, it bursts of itself under violent pain, and discharges a quantity of blood and ichorous matter. After this evacuation of the eye, its membranes do not collapse, but the eyeball continues to project from the orbit in a fleshy formless mass. The resisting hardness between the protruded eyeball and the temporal edge of the orbit is now felt, as in the former case.

When the protruded eye in those cases of this disease which are attended with exophthalmos entirely loses all power of vision, and is deprived even of its natural lustre, the death of the patient is not far distant. Where there is an exophthalmia, the life of the patient is not in such immediate danger, but the eye and the surrounding parts are gradually destroyed, and the bones of the orbit become so much affected, that after complete destruction of the roof of the orbit, after even the other bones of the cranium, and at last the brain itself have become affected, death slowly puts an end to the patient's sufferings.

We most earnestly recommend the present work of Professor Beer to those members of our profession, who regard the eye and its diseases as subjects worthy of their study as well as of their care. We must caution them, however, with regard to one particular, and that is, the peculiar phraseology in which many parts of the work are composed. Fortune, who seldom bestows any of her illustrious gifts, without throwing in along with them some trifling, some alloying part, has made Professor Beer a partizan of the revived Plotinism of Germany, or a *Natur-Philosopher.* Hence it is that his present work is a mixture of by far the best descriptions of the diseases of the eye which have ever been given to the world, with many pages of what appears to our unilluminated judgments but crude and childish metaphysics. These meet us too in the very threshold of his work. Indeed, it is not till the reader has toiled through two hundred pages of the first volume, and has arrived at the account of the inflammatory diseases of the eye in particular, that the obscure and tiresome language of Schelling begins to lose its ground, and to be replaced by those masterly descriptions which occupy the latter half of that volume and almost the whole of the second.

Those who know any thing of Professor Beer, know this, that in no case has he been satisfied with a few facts, on which to found any of his descriptions or distinctions of the different affections of the eye. On the contrary, they have been derived in most instances from innumerable and most careful examinations of the diseases themselves in the living body, and of pathological investigations executed on the dead. Now, in medical researches after truth, success depends, in a great measure, upon distinguishing one thing from another. "The best mode of obtaining and extending medical and surgical knowledge," observes Mr. Abernethy, "is, in my opinion, to pay that strict attention to diseases, which qualifies us to note even the slighter shades of difference that distinguish them from each other."

While we treat then with contempt and hatred, those who are evidently interested in involving different diseases in empirical confusion, and who are thirstily pursuing this base and cruel interest, we ought to be deeply grateful to those who discriminate them with accuracy and exactness, and especially the diseases of an organ so important as the eye. Yet, we doubt not that those who come unpreparedly to the perusal of the invaluable work before us, will be apt, from the orderly arrangement of its contents, to suppose Professor Beer rather a mere systematic, than an author of much reflection and most extensive experience; and as the subject is of a very minute, and even peculiar kind, the excellent manner in which it is treated will to a certainty escape superficial and hasty readers. It is, besides, unfortunately too true, that "the generality of medical men, from their multifarious concerns, prefer books which are so plain as to require no study, because they contain no information."

We cannot close this article, without urging upon our readers, to distinguish well between two very opposite methods of studying a subject of limited extent, such as that which is treated in the work now before us. The one is the method by concentration, and is that which Professor Beer has ever followed: the other, misplaced and contemptible in such a case, is the method by subdivision. The former method consists in the bringing together of a thousand lights from all parts of the horizon of knowledge, that they may shine upon a single point: the latter is an attempt to illuminate the same point, merely by stedfastly regarding it, and it exclusively. In the former method, a multitude of facts, all of them having some affinity to the subject in question, are first of all ascertained to be true, and are then brought together and compared, and give rise to a conclusion; what has been observed in the eye is compared with what has been observed in other parts of the body, and such erroneous observations as may have been made concerning the one are corrected by what is known of the others: in the latter method, the mind is contracted round the single point of its attention, which it turns and turns, and leaves as it found it. In the one method, every thing which has yet been discovered in anatomy, physiology, and pathology, is brought to bear upon the structure, functions, and diseases of one organ, for instance, of the eye: in the other, the structure, functions, and diseases of the remaining parts of the body are left out of view, the general principles of anatomy, physiology, and pathology are scarcely referred to, and the support of analogical reasoning is overlooked and even despised. To him who in the

former manner examines a particular organ, every atom of it is alive, and speaks a language indeed most eloquent: to him who pretends to investigate the same organ in the other method, all is dumb matter which he cannot understand. The former investigator must be successful—every step of his inquiries leads him to some new truth—his mind gains the invaluable habit of firm application, and acquires new vigour from the consciousness of every additional acquisition—he goes on with an enthusiastic ardour—and is constantly forced to the exclamation, Is it possible that so many interesting actions and changes can go on within a space so small! The other's are sterile studies, or terminate only in childish and but too often destructive inventions—he rises disgusted, with a confession that he has learned nothing from anatomy, and that physiology can be of no service to him—he has not acquired the art of controuling, directing, and concentrating the powers of his mind for any earnest investigation—his professional information betrays marks of poverty which cannot be concealed—he has no new acquisitions in view, but languishes through the unimprovable performance of a few mechanical repetitions—and it will be well indeed, if he is not induced to leave the narrow and difficult path of honourable exertion for a broader and easier way.

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Art. VI. *Des Etablissemens des Aliénés en France, et des Moyens d'améliorer le sort de ces Infortunés. Mémoire présenté à son Excellence le Ministre de l'Intérieur, en Septembre* 1818. *Par le Docteur Esquirol, Médecin de la Salpétrière. Paris, chez Huzard. Mars* 1819. 8vo. pp. 41.

The cause of humanity is so intimately connected with the science which it is the object of our labours to advance, and the unfortunate beings who form the subject of the present article have such strong claims on both, that we trust no apology will be thought necessary, if, at this early period of our labours, we submit the subject of Madhouses to the serious consideration of our readers. It is impossible to read the Report of the Committee appointed by the late House of Commons, without feeling the necessity of the most vigilant and jealous attention on the part of the public press, to all institutions, where almost unlimited power is granted to individuals capable of abusing it. The proceedings to which we allude are without a parallel in the history of human institutions. They developed scenes of abuse and iniquity, the bare mention of which

is sufficient to excite horror, existing in the asylums which a free and christian country had specially devoted to the reception of the most unfortunate of our species, and which were held up, not only to that country but to the world, as models for imitation.

The sensation produced by the Report of the Committee on the public mind, was strong and permanent; and, we rejoice to say, that its good effects have not been confined to England alone. The Governments on the Continent have taken alarm; and investigation has every where commenced.

The French Government appointed M. Esquirol to visit all the receptacles for lunatics in France, and the Memoir now before us is the result of a tour which he undertook for that purpose. It is but justice to M. Esquirol to state, that this memoir is drawn up with much ability and feeling; and, as far as we are able to judge, with strict justice and candour. It, in fact, does equal credit to the head and heart of the writer.

We shall now proceed to as extensive an analysis of the Memoir as our limits will allow. The Institutions of Paris are not comprehended in this work.

"Those for whom I plead," says M. Esquirol, "are the most interesting members of society; for they are almost always the victims of the prejudice, injustice, and ingratitude of their fellow creatures. Among them are to be found fathers of families, faithful wives, skilful artisans, brave warriors, and distinguished literary characters, ardent, proud, and acutely sensible minds; and yet these individuals, who ought to attract a peculiar degree of sympathy and interest—these unfortunate beings, suffering under the most fearful of human miseries, are treated worse than criminals, and reduced to a condition worse than that of the inferior animals. I have seen them naked, or half covered with rags, with only straw to protect them from the cold and wet pavement upon which they lay. I have seen them badly nourished, without air to breathe, water to quench their thirst, without, in fact, the first necessaries of life. I have seen them in narrow, dirty, infectious cells, without air, without light, chained in dens, where we should hesitate to confine the wild animals which the luxury of our Governments keeps up at such expence in our capitals. This is a faithful picture of what I have seen all over France, and this is the manner in which the insane are treated in almost every country of Europe." p. 5.

The same abuses appear to prevail in Germany and Italy. Reil, in speaking of the state of the insane, in 1803, thus expresses himself:—

"These unfortunate beings, like state criminals, are thrown into subterraneous dungeons, into which the eye of humanity never pene-

trates, and are there left to waste under the weight of their chains. Their physiognomy is pale and cadaverous, and they impatiently look for the moment which is to terminate their misery and our shame. They are exposed as a spectacle to public curiosity, and interested keepers exhibit them as they would wild beasts. These miserable beings are crowded promiscuously; and terror is the only means employed to preserve order. Whips, chains, and dungeons are the means of persuasion employed by keepers as barbarous as they are ignorant."

"Those who have visited the Lunatic Asylums in Germany," says Joseph Franck, "remember, with shuddering, what they there saw. A sensation of horror pervades us in entering these receptacles of misery and misfortune; for in them the cry of despair only is to be heard, and the man of talents and virtue is often their inhabitant. It is horrible to be assailed by some in rags, and in a state of disgusting filth, while the others are kept at a distance only by chains and the brutality of the keepers."

In 1810, a similar account is given by Maximilian André, of the German Institutions in general, and we know, from Chiarugi and d'Acquin, that the same is the case in Italy. This is a frightful, but we fear not an overcharged picture. The annals of our own country but too well confirm that such things may exist.

The insane, in France, are almost all placed in public establishments; either in institutions specially devoted to them, in hospitals, in the *depôts de mendicité*, or in houses of correction and prisons. They amount to 5,153 in number, and occupy 59 houses; out of this number, more than 2000 belong to the three great establishments of Paris. It is rather singular, that in the southern provinces of France, the proportion of men considerably exceeds that of women, while in the north, the reverse is observed. In Spain, the proportion of men is greater than that of women.

There are only eight establishments, peculiarly dedicated to the reception of lunatics in France. These are at Armentières (for men only), Avignon, Bourdeaux, Charenton, Lille (for women only), Marseilles, Marville, Rennes. There are several glaring defects in these institutions. At Charenton, for instance, part of the institution is used as a workhouse for the poor of the neighbourhood. Epileptic patients are mixed with the lunatics, and prisoners are occasionally confined in the same house. Incurable cases are also received, and are kept there for life. So it may be said, that there is in France no institution specially devoted to the treatment of insanity.

These institutions, though far preferable to the other establishments where lunatics are confined, are extremely defective

in their construction and internal government. M. Esquirol does not enlarge upon these defects, but proceeds to suggest the propriety of substituting for them a certain number of small establishments, capable of containing from 150 to 200 patients, as models for other institutions of a similar nature. And he proposes the following preliminary regulations:— 1. The patient shall not have been under any other treatment. 2. His malady shall not have existed above one year at most. 3. He shall not be affected with any syphilitic or contagious disorder. 4. As soon as his disease appears incurable he shall be discharged. 5. The patient shall not remain longer than two years in such an establishment. M. Esquirol says two years, from having cured nearly as many in the second as in the first year after attack.

In all the hospitals or other establishments for the poor, the portion of the building devoted to the insane is generally the worst and oldest part; often in a ruinous state, damp and unwholesome; and not at all adapted to the purpose for which it is used. Indeed, in some of the general hospitals, furious maniacs only are kept separate; the harmless patients and ideots mixing with the poor and incurables who occupy the hospital; the same treatment and government being employed for both.

In thirty-three towns of France, which M. Esquirol specifies, the insane are received into the general hospitals, which are also appropriated to the old, the infirm, and the diseased; to venereal patients, and to those affected with cutaneous disorders, and which even admit women of disorderly lives, and criminals. At the Salpêtrière and the Bicêtre, the quarter allotted to the insane is, in some measure, separated from the rest of the house. The insane have particular regulations and attendants; and a physician who attends them alone.

In the cities where *depôts de mendicité* have been established, a portion of the building is devoted to lunatics, but only to those who are furious; these are kept constantly chained in their cells. The others, intermixed with paupers, are without any of the care which their state requires. M. Esquirol specifies twelve places where lunatics are received into the *depôts de mendicité*. In seven towns, lunatics are even confined in prisons, and chained by the side of the most abandoned criminals. The latter can work, and the produce of their labour enables them to procure many comforts: the insane are deprived of this resource, and exposed to the jests of the most abandoned wretches. How humiliating must their state be, if a lucid interval reveal to them their situation; and if, in spite of

so many obstacles, a cure should be effected, how dreadful must the recollection be of such scenes!

Our author now proceeds to give, in a general way, the result of his observations:—

1. The buildings devoted to the insane in France are bad: for they are always confined, damp, and generally in a ruinous state; and even in the *depôts de mendicité*, and some hospitals where new buildings have been erected for the insane, they have been constructed without reference to the object for which they are intended.

2. The cells are dreadful: without air or light, narrow and damp. They are paved like the streets, are often under ground, and sometimes in caves. They have seldom any other aperture than the door, and a small square hole opposite to it; and very often, even this aperture is wanting. There is, consequently no circulation of air, and the smell is almost suffocating.

3. There often are no beds; and these unfortunate wretches, who are tormented with the want of sleep, so characteristic of this complaint, have only straw for mattrass, pillow and blanket.

4. Almost all the insane, not only the indigent, but those who pay, are naked, or only clothed in rags. They receive the tattered garments which have been thrown off by the poor, or the prisoners. Straw is all they have to protect them from the humidity of the ground, and the coldness of the air; and straw is sometimes wanting! "J'ai vu un malheureux imbécile, tout nu et sans paille, couché sur le pavé. Exprimant mon étonnement d'un pareil abandon, le concierge me répondit que l'administration ne lui passait, pour chaque individu, qu'une botte de paille tous les quinze jours. Je fis remarquer à ce barbare que le chien qui veillait à la porte des aliénés était logé plus sainement, et qu'il avait de la paille fraiche et en abondance; cette remarque me valut un sourire de pitié. Et j'étais dans une des grandes villes de France!" p. 16.

5. The diet is in general highly improper, for the ordinary allowance consists of badly dressed dry vegetables, and cheese. In the prisons, the insane receive bread and water, and that only when the jailor thinks proper to give it them. In one town, M. Esquirol found the allowance to be three pounds of bread, with a jug of water, for two days.

6. In no institution is there room enough for the patients to take air and exercise. The space allotted for that purpose is promiscuously devoted to both sexes; and, in some houses, the patients are brought out and chained to the walls of the court, by way of taking the air.

7. The attendants are insufficient, and ignorant; and, indeed, in

most houses the patients have no servants. In prisons, the jailor, who has fifty or sixty criminals to look after, has also to attend to beings, who have not the power of expressing their wants.

8. Chains are every where employed:—1. On account of the wretched state of the buildings:—2. From the insufficiency of attendance:—3. From the ignorance of the keepers:—4. From the expence of waistcoats. "J'ai envoyé des gilets pour servir de modèle dans plusieurs villes; on ne s'en sert point par economie, il est certain que les chaines coutent moins d'entretien." p. 19. The chains employed consist of iron collars, girdles, and fetters. In one institution, the patients were confined by means of an iron collar attached to a chain, a foot and a half in length. A whip is in the hands of the servants, and the bunch of keys is made a common instrument of correction. In all the establishments of Paris, containing 2,000 individuals, corporal punishment has been long abolished.

9. The medical men in the different towns have made many efforts to remedy these abuses; but, disappointed in their attempts, they have become disgusted, and only visit the insane who labour under illness, but never with a view to cure the insanity. The servants of the hospital order the means which they judge necessary. At Toulouse, from time immemorial, it has been the custom for the medical men to visit the indigent in the general hospital, but they never go into the quarter where the insane are confined.

10. The managers and governors, deceived by false reports, and frightened at the tales with which interested keepers awaken their fears, never visit the lunatics; reconciling their consciences to this act of neglect, by viewing the patients in the light of incurables, and thinking they have done enough when they have put them out of a state to do harm, and given them bread and water sufficient to save them from starvation.

Having detailed the abuses which exist, our author next proceeds to consider the best method of remedying them. He first enquires whether it will be most advisable to attempt a reform in the construction and management of the present institutions, or to construct new buildings specially devoted to the insane. What has been said in the preceding pages is decisive against the first plan.

He next enters on the propriety of establishing an institution for each department, or of making one establishment serve for several, and gives a decided preference to the latter plan. M. Esquirol observes, that in the former plan, the expence would be enormous. No department would require more than 30 or 40 beds, and in this small number it would

be almost impossible to carry the system of classification, which our author considers so important, into execution. It would be necessary to separate the male from the female patients; then to subdivide the furious, the melancholic, the ideotical, &c. &c. This would be making almost as many subdivisions as patients.

M. Esquirol considers a removal from his native place as advantageous to the lunatic; judiciously observing, that there exists in each department some particular prejudice on the subject of insanity, which, though sometimes harmless, is in many cases detrimental.—He further remarks in favour of large institutions, that no medical man will devote himself with that assiduity which the subject requires, for the inadequate salary which a small hospital can afford.

The plan of a Lunatic Asylum has been too often left to an architect; whereas it ought to be the result of all that can be collected from the observation and experience of medical men. It is not a mere receptacle for lunatics; it is an instrument of cure, in a disease where moral means are of the first importance. A lunatic asylum should not be built in a town. An open raised space, exposed to the east, with a dry soil, and well provided with water, should be chosen for the scite. It should consist of a central building, containing the offices and dwellings of the superintendent and persons employed, and this part ought to be two stories in height. On each side of this central division, a range of detached buildings should contain the patients; the women on one side, the men on the other. This range to consist of as many divisions as are necessary for a complete classification of the insane, and to be surrounded by a gallery, into which the doors and windows open.

Where the climate permits, the side of the gallery on which the doors open, and which is to connect all the isolated buildings one with another, and with the central building, should be exposed to the weather. The other side on which the windows open should be closed in: at one extremity of it there ought to be a stove, from which pipes may convey heated air to different parts of the building. In the centre of the patients' buildings, there should likewise be detached parts for workshops, infirmary, chapel, &c.

Such a building ought to contain separate dwellings for every species of insanity, and the convalescent should be carefully secluded from the sight of the other patients. M. Lebas has engraved a plan of such a building, which M. Esquirol intends publishing. It is right to mention that an institution has been constructed in Denmark upon our author's plan.

The different buildings ought not to be uniform; we are too much in the habit of sacrificing utility to uniformity. Thus, the part intended for furious maniacs, must be built in a manner totally different from the rest of the house. All the apartments should be wood-floored, excepting for those patients who are dirty in their habits. The dwellings of the convalescents should differ in nothing from ordinary houses.

Our author strongly recommends the patients being on the ground floor; that in fact there should be no upper story, and supports this recommendation in a very satisfactory manner.

1. It is not necessary to place iron bars nor bolts on the windows or stairs; for there is no fear of the patients precipitating themselves down. They can go out as they like into the gallery, and the effect of fresh air in shortening a paroxysm is well known.

2. It is greatly easier for servants, and it enables them to pay that constant attention which maniacs require: in the event of an accident or quarrel, the keepers can unite and render prompt assistance; if a patient be refractory and refuse to go to the bath, to his bed, or cell, it is not necessary to drag him up and down stairs at the risk of wounding him, or rendering him furious.

3. It is more convenient and less fatiguing to the keepers, and to the physician.

Lastly, An asylum, consisting of detached buildings, without any upper story, covering a large superficies of ground, resembles a village, the squares and walks of which present more extensive and agreeable places for recreation and exercise.

Such a plan may be objected to on the score of economy: true economy consists in the judicious fulfilment of the object in view. The chief additional expence will be in the ground; that in the country will not be so great an object as the staircases, the deep foundations, and the solidity required in buildings consisting of several stories.

Our author calculates that twenty establishments of this nature will be sufficient for France; eighteen of these will each contain 400 patients, and if we add the 2000 in the institutions of Paris, it will make the very extreme of what can be required.

On economical principles it will be necessary to retain the present eight special establishments, but these should instantly undergo a radical reform.

The three establishments of Paris being sufficient for their vicinity, there will remain only eight asylums to build. M. Esquirol calculates the first expence of each of these at 500,000 francs. He proposes that they should be built, 1. By subscrip-

tion; each subscriber to retain a right to nominate one patient. 2. By application of the present funds, which are so unworthily employed. 3. By donations from the departments for which they are intended. 4. By grants from Government.

The managing committee to consist of the prefects of different departments, subscribers, manager, physician, &c. The directors and physicians to be in constant correspondence with a central committee, immediately under the superintendance of the minister of the interior.

The promised publication of an extensive work on insanity, by M. Esquirol, will afford us the opportunity of resuming this interesting subject; we shall then enter upon a comparative view of insanity as existing in France and England, and attempt, by a reference to national habits and morals, to trace the causes which operate in producing it.

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## Art. VII. *A Comparative View of the Foreign and British Institutions for the Deaf and Dumb.*

The Instruction of the Deaf, considered as a science, involves all the interesting questions connected with general education, inductive metaphysics, and universal grammar.

The congenital individuality of character, with which every man is formed, and by which he is for ever distinguished, is, perhaps, never more strongly illustrated, than in those deaf and dumb persons who have been left to the natural developement of their faculties, without the bias of example, or the thwartings of restraint. There are some whose dispositions, talents and affections remain identical, in childhood, in adolescence, in old age. None, on the contrary, evidence more forcibly than the educated deaf and dumb, how much we are the creatures of the circumstances in which we are fortuitously placed, and of the instruction we receive. Thus, in a double point of view is this science interesting to the physiological moralist.

But the deaf and dumb present a no less attractive field of enquiry to the philosophical investigator of the constitution of mind. The way in which, whether merely deaf, or also blind, they are necessitated to receive knowledge—the manner in which we observe their ideas to become associated—the way in which they reason, abstract and generalize, without the aid of words, have thrown much light upon the principles of human knowledge, the mode of its acquisition, and the tenure by which

it is held. Their manner, too, of expressing their meaning, and communicating their wishes, by significant actions, or of holding conversations with others, whether deaf or not, by conventional signs, or gestural symbols, has tended more than all the labours of philologists to the formation of a true theory of signs, and the discovery of a natural universal language.

The simplicity also of their language of signs, and the uniformity of its syntax, satisfactorily set at rest most of the perplexing subtleties with which grammarians have contrived to obscure the grammars of particular languages, and lead at once to the formation of a simply constructed universal grammar, conformable to the association, and uniform current of our ideas, founded, not upon fanciful theories, or dubious speculations about words, but upon the facts of ideology and radical signs. We must be content merely to allude to these considerations, as their full illustration would lead us into digressions unsuitable to the work for which this Essay is intended.

Few are aware, we conceive, of the number of children who are born deaf; it is obviously difficult to form any calculation, and impossible to ensure its correctness. We have, however, some data from which the number in any one nation, or in the world, may be conjectured, with some approximation to the truth.

At the first public meeting of the Society for the Deaf and Dumb, in Birmingham, in 1814, it was stated by one of the speakers, that about twenty deaf and dumb had been already discovered in that city. Now, Birmingham, according to the parliamentary census of 1811, contained 85,753 inhabitants. Let us take this statement as a basis, and for facility of calculation, say it contains 86,000, and we shall find, that if there be 17,000,000* in the three United Kingdoms, there must be 3,953 deaf and dumb; or about one in every 4,441 inhabitants. Again, at the first formation of the Dublin Institution, a superficial enquiry made in that city discovered about 60 deaf and dumb. But as these were found without much inquiry, we may fairly conclude that the number was more considerable; and, in fact, several new cases have since been discovered. But let us for the present assume the above number as correct. The population of Dublin is nearly 200,000†, and that of Ireland about

* The parliamentary census of 1811, represented the population of Scotland, at 1,805,688—that of England, as 9,538,827: to which let us add the estimated population of Ireland 5,600,000. The total will give nearly 17,000,000.

† The population of Dublin, including the military and the sick in hospitals, was estimated in 1798, by the Rev. Mr. Whitelaw, to be 182,370. By the Rev.

5,600,000.* There must, therefore, be about 1,680 deaf and dumb in that kingdom, or one in every 3,333, which differs a good deal from the average deduced from the former calculation.

In a letter published in Glasgow (June 1818), with a view to solicit subscriptions for the formation of an independent seminary in that city, instead of sending pupils, as heretofore, to Edinburgh, it is mentioned, that eighteen children had been already sent to the Institution in that capital, and that twelve more are now under the tuition of Mr. John Anderson, at his school, in John-street, making the total number of pupils amount to thirty. All of these are between the ages of eight and sixteen; so that the total number in the city, of all ages, sexes, and ranks, must amount to, at least, double that number. Suppose we say only sixty. The population of Glasgow appears, by the parliamentary returns, to have amounted, in 1811, to 100,749, and the whole population of Scotland to 1,805,688. The numbers, in both instances, must have augmented considerably within the last seven years; so that, to facilitate calculation, we may take these numbers as 102,000 and 1,900,000. The total number, therefore, in that kingdom, would, by this calculation, be about 1,118, or 1 in 1,699½, say 1,700 inhabitants, a much larger average than either of those which have been deduced from other calculations. We have elsewhere seen it stated (upon what authority we could not learn), that the total number in Scotland was about 800 or 1 in 2,500, but in the present state of our knowledge on the subject, the other calculation is certainly to be preferred.†

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Mr. Walsh, who has re-edited the work of Mr. Whitelaw, in 1818, it is computed at about 198,000. By the examination made by Mr. Wm. Gregory, by order of the Lord Lieutenant, in 1813, it was rated at only 165,360. The reasons for Mr. Walsh's calculation, as stated in his History of Dublin, seem sufficiently strong to justify the computation in round numbers, which we have made above.

* It is much to be regretted, that no parliamentary census has been taken in Ireland. Newenham, in the last edition of his Essay on the Population of Ireland, estimated it at about 5,400,000. Ensor, in his work on population, gives reason for thinking that five millions and a half, or six millions, would be more correct. Lord Donoughmore stated it in parliament as about 4,900,000, but the other calculations are made on better data.

† In consequence of some debates which had occurred in the Houses of Parliament, the General Assembly of the Kirk of Scotland ordered returns to be prepared relative to the number of poor in that kingdom. The result of these enquiries has been published; and, among other circumstances connected with the more immediate object of investigation, it is mentioned, that 542 deaf and dumb persons had been discovered. But there were only about 750 out of 850 parishes which made returns. Therefore, we must add to the number above stated 2-15ths more, or about 72, which will make the total amount 614. But as it seems to us, from this report, that these calculations only include those in the families of the poorer

There is, however, another mode of calculating the number of deaf and dumb in Scotland, and which would, probably, be more correct than either of the three calculations which we have given. We mean the number ascertained to be in existence in one of the Scotch shires—Aberdeen; which, including the country, as well as large towns, is not liable to any of those objections which may be urged against calculations made from the number found in large cities. In a little work which has been forwarded to us from Scotland,* it is stated, that in the shire of Aberdeen, there are seventy-one persons of different sexes and ages deaf and dumb. If this statement be true, we may thus argue:—The total population of that county in 1790-6, was 122,949; in 1798, 122,921; in 1801, it amounted to 123,082, having increased in three years, by 161 inhabitants. If, therefore, we may reasonably suppose it to have continued to increase in the same ratio, the present population must be 124,045. The average, therefore, of deaf and dumb, to the general population, must be one in 1,747. If, therefore, the population of Scotland be 1,900,000, the number of deaf and dumb, by this calculation, must be 1,087.

A gentleman, connected with the Parisian Institution, told us, that the estimated number in France was about 8,000; a number which, if we take the population of that country to be 29,000,000,† would give an average of one in 3,625. On this calculation, the number in Ireland should be about 1,545, which agrees sufficiently with the number calculated from those found in Dublin.

In an address by Monsieur Laurent Clerc,‡ to the Governors and both Houses of the Connecticut Legislature (May 28, 1818), it is stated, that there are about 100 deaf and dumb in the State of Connecticut, and about 2,000 in the United States; but, as the State of Connecticut contained some years since about

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classes, the total number must be much greater, probably by one half. And we may here observe, that calculations made from accurate enquiries in cities, where such enquiries are easily made, and the population exactly known, are much more to be relied on than those drawn from parochial returns, though, probably, those returns are more correctly made in Scotland than in any other country.

* A Treatise on the Education of the Deaf and Dumb, &c. &c. by John England, Teacher of the Institution under the Patronage of the Society for educating the Deaf and Dumb, Aberdeen.

† By the census quoted in Malthus's Additions to his Essay on Population, p. 4, the population of France is rated at 28,786,911.

‡ Formerly one of Sicard's most celebrated pupils, and for eight years one of his ablest assistants; now joined with the Rev. Mr. Gallaudet, an American, in the direction of the Connecticut Asylum.

251,000 inhabitants*, and the whole league (exclusive of the dependent territories), according to the census of 1810, contained 7,036,563†, the total number in the United States should be about 2,800, or one in 2,800, and as M. Clerc has not given the grounds of his calculation, this one is probably more correct.

Again, in the discourse pronounced at New York, by the Honourable Samuel L. Mitchell, at the request of the Society for instructing the Deaf and Dumb, in the City Hall, on the 24th March, 1818, it is stated, that sixty-three have been already ascertained to be resident in that city, and eight in its vicinity, but that it is believed that the number in the city alone will be found to amount to one hundred, when the search is completed. For the present, however, we will take the number, whose existence is positively ascertained. Now, the population of the city of New York, in the year 1815, amounted to 80,000.‡ If, therefore, there be sixty-three deaf and dumb in this number of inhabitants (and this, from the minuteness with which their ages are stated, seems to be one of the most accurate investigations ever made),§ there must be in the State of Connecticut not one hundred, as M. Clerc supposes, but nearly 200, and in the whole United States, not 2,000, but upwards of 5,500, giving an average of 1 in about 1,273, by far the largest average that we have yet seen.

In one district in Sweden, comprising five dioceses (Upsal, Vexio, Calmar, Scara and Carlstadt), more than 200 were discovered.‖ The population of Sweden was then estimated at 3,320,647,** but we have no means of ascertaining the population of these five dioceses, or of the other, and therefore cannot, in this way, form an estimate as to the total number in the kingdom, or the average to the general population. By another process, however, we may form an estimate. These five dioceses contained 200 deaf and dumb. Therefore, each of them probably contained about 40; and the three, Upsal, Calmar, and

* In Mellish's Travels, p. 98, this is stated as the census of 1800.

† Mellish states, that with the dependent territories, it rated 7,239,903. Ensor, in his work on population, supposes it to amount, at present, to eight millions and a half, or nine millions.

‡ Mellish's Travels, p. 56.

§ We have no means of judging whether the proportion be greater in cities than in the country, or vice versa, though, possibly, it is greater in the former. We have therefore applied calculations made in the one to the other.

‖ Monthly Review, 1817, July. Vol. xxiii. p. 582.

** This was previous to the loss of Finland. The number, at present, according to Thomson, in his Tour in Sweden, is 2,414,150.

Carlstadt, together contained about 120. Now, each of these dioceses is a province, and the whole of Sweden, at present, contains twenty-seven provinces, excluding the city of Stockholm. If, therefore, three provinces contain 120 deaf and dumb, the whole twenty-seven provinces, or kingdom, may contain 1,080, which, if the population be 2,414,150, will give an average of one in about 2,215.

From the number of mutes who are attached as guards and messengers to the courts and seraglios of some Eastern potentates*, we may learn the general fact, that in these countries there are probably as many as in Europe; and from Mr. Mariner's account of the Tonga Islands, as well as from travels and the histories of other uncivilized nations, we may infer, that it is not in civilized life only that such imperfections in the organs of hearing occur. Possibly also many of the mimi at Rome, who are reported to have made themselves understood on almost every subject by those who beheld them, were persons deaf and dumb. We learn also from sacred history, that among the Hebrews and Egyptians many deaf persons existed. Every one remembers the instances of the cure of deaf and dumb persons in the New Testament. The command, "Thou shalt not curse the deaf," and various other passages in the sacred writings, prove that this infirmity was well known.

From the whole of the above data we may reasonably infer, that the number of deaf and dumb is very considerable in every country; and, as the only means of estimating the probable number at present in the world, we must take the several averages thus obtained. We find, then, that by nine calculations † we have obtained the following different averages:—1 in 4,441—1 in 3,333—1 in 1,700—1 in 2,500—1 in 3,625—1 in 2,800—1 in 1,273—1 in 2,215—1 in 1,087. These numbers added together, and divided by 9, will afford, as the mean average, 1 in about 2,441. Hence, if there be about 800,000,000 inhabitants in the world, there must be upwards of 327,734 deaf and dumb persons in existence at present, a number exceeding, by nearly 100,000, the inhabitants of Dublin, the second

* In one account of Turkey it is mentioned, that the Grand Signior, not knowing what to do with the deaf and dumb of his empire, employed them in playing pantomimes.—See Clerc's Address, before quoted.

† The authorities for some of the above mentioned data may not appear satisfactory, and we confess that they are not entirely so to ourselves; but we would observe, that it is an entirely new view of the subject, and that for the present these are the only data we possess, or from which any calculations can be formed; and therefore we must be content if they give a prospect of coming nearer the truth than we would by a mere random guess.

city in the British empire, and nearly as great as the whole population of Edinburgh, Glasgow, and Bristol together.

If, however, we multiply the number of the deaf and dumb in the world, at any one time, by the number of generations (which, supposing these to average 30 years one with another, would amount to near 200) that have successively passed through life, the total number of those unfortunate persons who have lived and died almost forgotten, will appear to have already amounted to 56,939,400, a number which, if collected together, would form a nation greater than almost any of the powerful nations that the world has ever seen.

Upon this calculation we do not lay much stress, because the world has probably not had at all times as many inhabitants as at present. But we believe any one who has studied the almost constant correspondence of the overflowings and subsidence of population in the different parts of the world, since the rise of the first great Eastern empires, will see that the total number of inhabitants in the world at once does not vary so much as is generally supposed. Yet, in one point of view, we do lay stress on the calculation, and at the same time take advantage of the objection to its value, attempted to be derived from the gradually increasing populousness of the world; for both tend to shew, that even if we must make some deduction from the number above calculated to have existed, we must, on the other hand, augment in an incessantly increasing ratio the calculation of the number that will, in future ages, enter life; and, in the same degree, enhance the importance of henceforward attending to their education. We know not whether these calculations will have any effect upon others; upon ourselves they have made a deep and lasting impression. Who would not shudder at the thought of consigning to perpetual slavery the whole of our 55,000,000 subjects now living in Hindostan, or all the tribes on the African slave coasts? And yet, if we neglect the deaf and dumb, we do virtually consign to the basest mental and moral servitude a larger number of those who are equally with us freemen in creation, and subjects of the beneficent theocracy of the universe.

Again, there is another circumstance which makes the deaf and dumb of more melancholy importance: we mean, that the number in each family is generally considerable in proportion to the total number of children. Thus, in one of the early reports of the Asylum, in Kent-road, London, we find the following list of the proportionate number in some families :—

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Children, - - | 2. | 6. | 6. | 7. | 2. | 3. | 5. | 6. | 8. | 11. |
| Number of Deaf and Dumb, | 2. | 2. | 3. | 2. | 2. | 3. | 3. | 3. | 5. | 5. |

The late investigation in Ireland discovered families in which there were 2, 3, 4, 5, &c. so circumstanced. In one family there were 5 children all deaf and dumb, in another 7, in a third 5 out of 10 were so, in a fourth 10 all deaf and dumb, and in that of a poor militia officer, on half pay, there were 9 born in succession deaf and dumb. While making inquiries at Geneva, last year, on this subject, from the widow of the late celebrated Dr. Odier, we were informed of one family, that of a poor mountaineer, whose wife had just died, after having borne him 9 children, all deaf and dumb, who were then living.

Having made accurate inquiries at the Parisian Institution, through which probably some thousand pupils have passed, we were told by one of the masters, Monsieur Bebian, a very intelligent young man, that except in one instance of a boy now in the Institution, the son of an engraver, and formerly a pupil of the Abbé de L'Epée, no candidate had ever presented himself, whose parents were not "Des entendans-parlans," as the deaf and dumb call us very correctly, in contra-distinction to the term, "Sourd-muets," which we have given them.

Clerc, in his Address before mentioned, states, "that many of Sicard's pupils are married, and have children endowed with all the senses, and who promise to be the protectors and comforters of their parents in their old age. The United States (he adds) is the first country where I have seen one or two deaf and dumb fathers, some of whose children are deaf and dumb like themselves." This, however, is a mistake; and M. Clerc must either have forgotten, or not known that there is now in the Parisian Institution one pupil thus descended, who is not only deaf and dumb, but somewhat deficient in intellect.

Who, that reflects for a moment on the varied and refined gratifications which he has derived from the communication of knowledge, can look without the most lively compassion upon an individual, growing up among his fellow creatures, without any adequate medium for the communication of his own ideas, or the reception of theirs—a being, who, though born with all the feelings and social sympathies of man, and all the capacity and destination of a rational and immortal soul, is disinherited, as it were, by the evil destiny of his birth, from all the pleasures of society, the charms of literature, and the blessings of religion.

We now proceed to give some account of the foreign schools for the instruction of the deaf and dumb. We shall then add some observations on the schools in the British Empire, and conclude with a brief account of the principal works that have been writ-

ten on the subject, and an explanation of what appears to us to be the best mode of their education.

*Bourdeaux.*—The Royal Institution for the deaf and dumb at Bourdeaux was formed about the commencement of the year 1786, by M. Champion de Cicé, the same benevolent archbishop who, having conceived the project of giving to France a successor to the Abbé de L'Epée, executed it by sending the Abbé Sicard to Paris to learn from that excellent man the mode of instructing the deaf and dumb. For a long time the school remained under the direction of Sicard, and it was here that he first met and instructed his celebrated pupil Massieu, the account of whose education is given in detail in the Abbé's "*Cours d'éducation d'un sourd-muet.*" After the removal of Sicard to Paris, the institution was placed under the care of the Abbé de St. Servin, of whom one of the present masters, François Gard, was a pupil.* Gard bestows the highest encomiums on his master, but we find no detailed mention of him in any work, and as he has not published on the subject, his method, if it had any thing peculiar in it, is unknown in this country; probably, however, as he was much connected with Sicard, their systems of instruction were the same.

This institution, like most charitable establishments in France, is under the immediate patronage and protection of Government—and in it, as in that of Paris, the State supports a certain number of pupils. The number of poor scholarships endowed at Bourdeaux at present is sixty, of which forty are for boys, and twenty for girls. Besides the pupils supported by Government, the institution admits a certain number of boarders of both sexes, whose parents are capable of paying for their maintenance and education—but though thus united in the same building, they have separate rooms, and are more assiduously superintended. The pupils of different sexes are also completely separated, so that they never see each other, residing in different parts of the building, and having particular masters appropriated to each. The rich and poor re-

* This gentleman became deaf (as we were informed by Massieu at Paris) when he was only seven years of age, and, as is uniformly the case, lost the power of speech, forgetting even the commonest words he had learned. He commenced his education about 27 years since, is perfectly well informed upon all subjects which are usually studied, well versed in history, literature, politics, and languages. He has been taught Greek and Latin; and has, by himself, acquired the English language, of which he even shewed us a grammar written for his own use. On presenting him with a printed report of one of our institutions, he immediately translated part of it into French.

ceive their lessons in common, but different masters afterwards make them repeat each day the instructions which have been given them.

The institution is also provided with suitable masters for teaching writing and drawing, and for instructing the male pupils in the different trades, and the females in needle work, the ordinary household duties of servants, &c. The male and female superintendants are constantly with their pupils during the day, and at night sleep in their dormitories. Divine Service is performed regularly in a neat chapel connected with the institution, and the management of the house is said to be mild and paternal, though strict. The domestic economy of the house, and all its interior management is entrusted, as in most charitable institutions in France, to a species of "Sœurs de la charité," females of the congregation of Névers, who possess numerous establishments in France, and whose services at all periods, even during the worst times of the Revolution, deserve most highly of their country.

The instruction which they receive is so graduated that, commencing from the state of ignorance in which the pupils usually arrive, it may lead them to the highest attainments of which they are capable. The extent to which their education is carried depends upon their talents, rank, and destination in life. Of its general plan we shall speak hereafter more at length.

The education of the pupils is under the general direction of an instructor-in-chief, at present M. Guilhé, an instructor "en second," the Abbé Gondelin, two assistant instructors, one of whom is M. Gard, before mentioned, the name of the other we do not at this moment recollect. A repetition-master ("répétiteur") for the boys, who is also deaf and dumb, and a repetition-mistress ("répétitrice") for the females.

A public examination is held every year, on the 27th and 28th of August, when an account is given of the progress of the pupils, and they are publicly examined by any one that pleases to question them, on such subjects as they have studied during the past year. Previous to each public examination, a "compte rendu" is published, stating the subjects on which each division may be expected to answer. And at the close there is a distribution of prizes. The "compte rendu," published last year, has just been sent to us by the administrative commission, but it is so full of the philosophical views, and love of systematizing, which belongs to M Guilhé, whose method of proceeding with his class it details, that it is unfit for insertion. However, the list of prizes, given last year, will give a very good idea of the advancement of the pupils, and of the great extent to which

their studies are carried. Among these we find some for industry, good conduct, studiousness, rational grammar, application of grammar and literature, intellectual philosophy, morals, religion, geography, chronology, history, arithmetic, mathematics, &c. writing, drawing, &c. turning, cabinet-making, shoemaking, tailoring, and needle work, &c.

The institution is situated in a street which we believe is now called the "Rue des Religieuses," and it was formerly a convent: it is very irregularly built, but forms nearly three sides of a small square, behind which is a large garden. In the centre building is a large room, in which all the male pupils dine, one of them always acting as chaplain, asking a blessing and returning thanks in a prayer, which he expresses (we had almost said utters) by signs, and which all the rest repeat. Over this are their dormitories. In one wing are their several school-rooms, and in the other, totally inclosed, are the apartments of the female pupils. Several workshops are distributed throughout the building, and thus a number of necessary trades are carried on within the Institution, by which not only much expence is saved, but the children also learn such mechanical occupations as are suited to their health, circumstances in life, and talents; by means of which, when sent forth into the world at the end of their education, they are able to gain their own livelihood, and to become the independent heads of families, who, in return, take care of their old age, and are thus rendered industrious members of the State, instead of idle and unproductive burthens.

Some of the pupils have shewn remarkable talents for painting, as indeed might have been anticipated from what we know of the effect of deafness upon the education of the eye and its corresponding faculties; and among many pleasing proofs of their attainments in this department, we noticed particularly among the oil paintings in the chapel, one drawn by the most distinguished pupil, representing the miracle of curing the deaf and dumb man.

The pupils are divided into different classes, having different rooms for their lessons, and to each class is allotted a distinct master, who conducts them through their whole progress until they finally leave the school; at least, such is the common arrangement, but it is not universally adhered to, for there are at present more classes than masters. This plan of instruction did not appear to us to possess that uniformity which we should be led to expect from M. Guilhé's "programme" before mentioned; each master, in fact, followed his own plan. It has certainly this advantage, that the master is allowed to become perfectly acquainted with the dispositions and powers of his pupils; and

every man naturally labours with more zeal and pleasure in his own views, than when obliged to march implicitly in a prescribed route. It has, however, the obvious disadvantage of permitting, with each new master, much valuable time to be lost before he acquires sufficient experience, and of allowing experiments to be tried which, resulting, as they often do, from erroneous theories, must issue in disappointment. On the whole, however, we believe the plan is good, and worthy of imitation in any country where, like France, the obtaining of masters is not so expensive as to render it impracticable.

The furniture of the school-rooms is very simple, consisting of nothing but several large moveable wooden tablets, painted black, and supported in frames. These, with a box for chalk-pencils, copy-books, in which the pupils write down each day what they have learned or seen, a few pictures, maps, and a small library of ordinary books, constitute the whole apparatus of instruction. Each scholar carries a small piece of slate and a pencil in his pocket, and by means of these keeps up conversation with strangers, or with any person who does not understand the language of signs or the manual alphabet. "L'Ardoise est la langue de nous autres sourds-muéts," said one of them to us one day, when asking whether any of them had learned to speak. There is but one scholar in the institution who has learned to speak, he is a boy of about ten years of age, in the class of the Abbé Gondelin, and has been taught by him. However, he was not born deaf, and had learned to articulate before he had lost his hearing, after which, as usual, he almost entirely forgot how to pronounce even the words he had learned. The Abbé made him translate into words the several actions which he performed in his presence.

The general progress of the scholars was highly satisfactory. They seemed to possess the French language very well, and though there were still frequent peculiarities to be observed in their manner of expressing themselves, both as to the turn of thought, the words used, their syntax, and their order; yet, as to its grand end and purpose, the communication of thought, language seemed to be as much in their power and enjoyment as in ours. The peculiarities alluded to are often very remarkable, some of them arising from the particular condition of the minds and senses of the deaf and dumb, but by far the greater number resulting from a circumstance in general too little attended to in their education, namely, that the order of their ideas is, in fact, very different from what we generally suppose must be the order of our own and of theirs; and that the grammar and syntax of their natural language of gesture

knows no distinction of adverbs and adjectives, of conjunctions and prepositions, of verbs and substantives, &c. and also necessarily corresponds with the grammar and syntax, or in other words, the natural order of their associated ideas. Hence, unless this be particularly attended to, and its effects counteracted, they will never perfectly acquire our language, because, as is always observed in foreigners, and, indeed, as we might have expected, they have a constant disposition to bring the rules of their own grammar into the construction of ours, and to subject our language to the laws of their own syntax of ideas.

Thus, for example, the principal idea always comes first in their minds, and the modifying ideas follow; of course, the former is always put first, and the latter made secondary in the expression of their ideas by signs and words. We may illustrate this, by observing, that if taught a variety of single words, without these words being at the same time shewn as they stand in sentences, they will constantly write "coat blue," and "teeth edges," &c. for "a blue coat," and "the edges of the teeth," &c. Again, until corrected, they will always, as far as we have observed, construct sentences for themselves, in the following reversed order:—"coat made tailor," instead of "the tailor made the coat," &c. and the inferences are, that such is the order of their ideas, that their language has no mere verbal articles, though it possesses signs which more than supply their place. That such is the natural order of their ideas is proved, not merely from more simple (or, as they are falsely called "barbarous") languages, but also from the order in which the deaf and dumb make signs, when as yet untaught by us.

It will be at once obvious, that nothing but unremitting practice in our manner of arranging words, can correct these and similar defects, in the manner in which they acquire and use our language, all of which, we have been perfectly convinced, can be perfectly remedied by proper instruction. Having expressed this conviction one day in conversation with M. Gard, he said, "If you ever succeed in teaching the deaf and dumb to write with perfect grammatical precision and correctness, you will effect what has never yet been done, and what I fear is impossible." An expression once used by a very extraordinary man, was "I delight in meeting impossibilities, I trample on impossibilities." We would presume here to adopt the sentiment, not from vanity, but from knowing the simple cause of this apparent difficulty. We know it to be easily removeable, and we now even see that the teachers of the deaf and dumb have only failed of accomplishing, in every instance, this most desirable object, in conse-

quence of their having pursued an erroneous mode of instruction with their pupils, not carrying on their education in the same simple natural practical manner in which common children are taught by their mothers. Let any one observe how these learn, and they will see that it is by the perpetually recurring illustrations of the meaning of words, of the mode of constructing sentences, and of particular grammar, which are afforded by the converse of the domestic and social circle; while, on the contrary, the teachers of the deaf and dumb try to model their education upon abstract philological and grammatical speculations, and on principles which have no existence but in their own hypothetical notions of the philosophy of natural language and universal grammar. To pursue this subject, at present, would lead us away from the object of this part of our Essay, and it must therefore be reserved for the conclusion.

We had many interesting conversations, on various subjects, with M. Gard, especially relative to his mode of instruction; and, as we generally carried on these conversations in writing, we have been enabled to preserve some of them. From the view which he gave us of his method of proceeding, it appears, that he follows nearly the same plan as Sicard, which is another reason for supposing that the views of his master St. Servin agreed with those of that author. In one point, however, we observe he differs from Sicard, for he says—"The pupil must first be taught the alphabet; when he has acquired this, you may write down the names of several objects before his eyes, pointing them out to him in succession, and making him do the same, in the same, and in a reversed order." But we entirely agree with the Parisian master, in thinking that it is much better to begin at once by words, which having some meaning, may interest attention, than to waste time on the alphabet, which has to them no meaning whatsoever, unless when they are learning to speak. "Where the objects are not present," he added, "you must design them on the board, or what is, perhaps, better, give your pupil a description of them in signs, which latter mode appears to me the more suited to develope their ideas. To this step we must add adjectives, of which we choose at first those easily conceived—for example, those of colour, of sight, of touch," &c. Having asked him how he classified the adjectives which are not in relation with the five senses, he replied immediately, "Say rather the four senses, for the adjectives which relate to hearing, must, as far as concerns us, be referred to the class of abstract adjectives; of any of this class, as well as of abstract

substantives, we cannot speak to our pupils, until they are much more advanced. After having learned the substantive and the adjective, we find a necessity of uniting them together. Hitherto the pupil has always united them by a line; this is the moment to suppress the line and substitute the verb "is," and this appears to me the best and most simple method, *car souvent on embrouille les idées à force de vouloir les très éclairer.* The pupils thus, at first, always write the verb in the third person. I then begin to teach them the pronouns. There are some whom I allow, for some time, to write the three personal pronouns, with the verb in the third person; but in the succeeding lesson, I re-establish them in their proper relations. After this the pupil learns the modifications of the verb, in order that he may in the succeeding lessons write correctly what is said to him. He then proceeds to the different tenses of the verb."

We confess we cannot see any necessity for all this process in the instruction of the deaf, any more than in the instruction of common children; and to let those of slow capacities write a sentence wrong, in order to be taught afterwards how to write it correctly, seems to us, at best, not natural. We must here pass over many material points of M. Gard's communication, as it would extend this Essay too much to introduce them all, and hasten to another quotation, which seems important. "I forgot before to speak to you of the cyphers which we put over the words of a sentence, they are very useful in preventing the pupils being deceived as to their syntax:—for example, we may take these sentences—

1 2 1 3 4 5 6 7<br>
I am striking *the table*, with *the ruler*, with force

1. is always the principal word or the subject. 2. The verb. 3. The direct complement, regimen or object of the verb. 4. A preposition. 5. The regimen of the preposition. 6, 7. An adverb, although it often immediately follows the verb. In the second lesson you gave only the first two numbers, and continued to do so until the fifth lesson, of which I am now going to speak.

"First tell one of the pupils to strike the table—Another<br>
1 1 2 1 1 2<br>
writes, Richard strikes Richard striking is. This constitutes<br>
1 1 2 3<br>
the first step; ask him then, by signs—"Richard strikes, what?"<br>
1 1 2 3<br>
he writes "Richard strikes *the table*."

"In this manner you execute various actions, and if you have taken care previously to give him a good collection of verbs he writes them down. These exercises should be continued for

many days, and when the pupil is perfect in them, a preposition, with its regimen marked 4 and 5, should be added

1 2 1 3 4 5<br>
thus:—You are putting *the tablet* on *the table*. After some days more, you perform two actions at once, and he describes

1 2 1 3<br>
them, and numbers the words thus:—Thou hast taken *the box*<br>
4 5 6 7 1 2 1 3 4 5<br>
off *the table* gently, and thou hast given *the box* to Richard<br>
6 7<br>
cautiously. Make him observe that he has repeated the words *the box* twice, and tell him to substitute *it* in its place, numbered in the same way."

Having afterwards asked him when he began to ask them questions, he said, "This is the moment."

At another time M. Gard said, "The instruction of the deaf and dumb has not as yet been reduced into one consistent method, but our teachers ordinarily follow the plan which I have traced above, until the pupil is capable of conversing; afterwards, every day is employed in conversations between the professor and the pupils; who always endeavours to vary the subject of conversation, to make them study in the evening the conversations of the forenoon, and on the morrow to require an account of their subject of study; for example, one of them collects all the answers together, and with them makes a continued discourse; another under the form of a "Compte rendu," gives a list of the questions and answers; a third re-produces the whole, such as it had been taught him on the preceding evening, &c. Take care always to introduce into your conversations the interrogatives why? how? how much? &c. because answering is always sufficiently embarrassing to a "deaf and dumb," thence it is necessary to accustom him to it early. It is also very important to make him give an account of every variety of action which is performed before him. You should also make him distinguish between, 1st, a question, 2dly, an order, and 3dly, an enunciation; for example, 1st, *Master.*—What have you put in the box?—*Pupil.*—I have put a penny there.—*Master.*—What did I ask you?—*Pupil.*—You asked me what I had put in the box, and I answered you that I had put a penny there. 2dly, *Master.*—Take this book.—The pupil takes it.—*Master.* What did I say to you?—*Pupil.*—You said to me to take this book. The master ought also to address the same questions to the other pupils, in order to make them learn the change; the pronouns, for example:—*Master.*—What did I ask such a pupil?—*Another pupil.*—You asked him what he had put in the box, &c.

"In a word, it may be said, that the instruction of the deaf and dumb should consist principally in conversations, until he acquire a perfect knowledge of language: afterwards he may be made to study whatever you please; literature, religion, mathematics, history, &c. You should never give him any sciences to study unless he be first well versed in language. Some masters wishing to shine in the eyes of the audience at public exhibitions, make him begin these before the proper time, but the pupil derives no profit from them, and merely repeats the answers which he has been obliged to learn by memory, like a parrot, and this has the air of charlatanism." We have already extended so far these extracts from notes of our conversations with M. Gard, that we must pass over all the remainder, and conclude by the admirable answer which he gave us one evening, when we said that we feared to tire his patience by our inquisitiveness: "Non; il s'agit des malheureux sourds-muets; en recevant l'instruction j'ai contracté l'engagement d'y faire participer ces autres; c'est une dettes acrée." We regretted that our short stay prevented our profiting more by his willingness to impart information, but we have arranged matters for a correspondence with him and he promised us that he would prove his interest in the fate of the deaf and dumb of our country, by sending to us an essay on the subject of their instruction, and a grammar which should be fuller than the hints thrown out in our conversations could be.

The class which afforded us the most satisfaction was that of the Abbé Gondelin. There appeared to us more simplicity and attention to practical utility in his mode of teaching than in that of any of the other masters, with the exception perhaps of that of M. Gard, who followed nearly the same plan. The general order of the Abbé's instruction seemed to coincide pretty much with that of Sicard, as developed in his works, divested, however, of much of its philosophical precision, unnatural systematizing, and curious philology, and reduced to a form somewhat more analogous to the simplicity of nature, and the unartificial mode of the ordinary maternal and domestic education of infants. The children, however, in this class, as in that of M. Gard, needlessly began by the alphabet both written and manual. They next proceeded to classified arrangements of substantives. To these they joined classified adjectives, and next connected them by what is called absurdly the substantive verb, but what should be called the word (verbum), the mere word, having no correspondence with any thing existing in nature, serving merely to connect words in writing. They afterwards advance to the other verbs and their different modes and forms. They thus arrive at propositions, and through them at

phrases, and while constructing these they are made to observe the grammatical use of the articles, which, though presenting no difficulties in our language, are encumbered with many in French; the practical use of the article they had already acquired. Here also they learn the form of an interrogation, and are daily exercised in questions as to what they observe passing around them. From adjectives to the class of substantives called abstract, the step is easy. The adverbs and prepositions, united with the substantives and adjectives already learned, are taught together, because it is obvious that, "with ease" "and easily" mean the same. The conjunctions follow, and are the most difficult, and though it is attempted here, as at Paris, to derive aid from grammatical philosophy,* in teaching the conjunction, and indeed every other part of speech; yet, we are satisfied, that when the pupils have learned a great variety of propositions and phrases, the difficulty of learning the conjunctions is in a great measure done away, and that it is practice alone which can surmount what remains of difficulty. Is it not in this manner that ordinary children learn the meaning of the conjunctions, by finding them constantly placed in certain relations between the distinct propositions of innumerable phrases and sentences, and observing the dependence, union, or dissociation, &c. of the ideas which these propositions indicate in the minds of the speakers or writers? Hence it is to us obvious that, with the deaf and dumb especially, repetition and variety of illustration are infinitely more useful than all philosophical views or philological investigation, and that the ordinary mode in which parents have ever taught, and in which alone children have ever learned, is incomparably more simple than any scientific march or theatrical arrangement can become.

The Abbé gave us several illustrations of the manner in which he teaches his children to reduce all sentences into simple propositions; it resembles that of Sicard, as explained in his chapter called "Théorie des Chiffres;" for example, he wrote the following sentence: "Le monsieur qui nous honore de sa présence vient d'où il a établi une école pour les sourds-muéts," and required one of the pupils to decompose it into the distinct propositions of which it is formed. The pupil immediately wrote as follows:—Ce Monsieur nous honore de sa presence—Ce Monsieur vient de—Ce Monsieur a établi à —— une école pour les

* See Sicard's works; or, what are, on this point, much better, Horne Tooke's Observations on the conjunctions, and their derivation from verbs, &c.

sourds-muets." This satisfactorily shewed that he understood the nature of the proposition.

Speaking of the manner in which the deaf and dumb are in general taught long vocabularies of classified words, before they begin to construct, or even to read phrases and sentences, he very justly observed, that it was a very great error to keep them too long learning the mere name of physical ideas and single perceptions or conceptions, and that they should be led much sooner than usual to the combination of words. Yet, even his own pupils appeared to us to continue too long in this very preliminary stage; for we observed in their copy-books, that it was not until they had learned a "vast assortment of empty nouns" that they began to learn any adjectives, or to unite these together, and that it was equally long after this latter step before they arrived at verbs; among other instances of this, we observed in the pupils' copy-books many more kinds of soup enumerated in their vocabulary of substantives than in "Very's Carte," all the names of which had been learned, as well as are infinity of other similar things, before they were given any adjectives. To us it appears that the simple word "soup" would have served all their purposes for a long time, and that the time lost in learning that there was a "potage au vermicelle"—a "consommée," a "potage au chouxcroutes," &c. would have been much better spent in learning adjectives and verbs, which might be united to the substantives which they had learned. We are satisfied from our observation of ordinary children, as well as of the deaf and dumb, that the whole of this delay is needless, and that it is as easy to teach them at once what is meant by "this is a man," or "a blue surtout," or "give me that brush," as to teach them the single words "man," "blue," "give."—Nay, it is easier and more likely to be recollected, because more obviously useful. We should therefore waste no time upon classified words at first*, but commence at once by simple sentences, so graduated and varied as to insure that in their body and construction these classified words should appear to the pupils in their natural relations, and not solitary, as in a vocabulary. This we believe to be the most important of all the principles to which the instructor should attend; and, in fact, the only one of universal importance. Acting on this principle, any parent

* After the pupils are considerably advanced in language, these vocabularies may be of great use to them to ensure their not omitting to learn any important word: but these they may learn after having left school.

may teach his deaf and dumb children as easily as the others who are not deaf, and as well as any of the professed teachers of this particular class of pupils. Neglecting it, not even the most indefatigable master will ever succeed in giving them a correct and elegant facility of writing. What should we think of a man professing to direct another how to study geology, who would advise him to go to a museum of minerals and spend months, nay, years, in learning all their names in a certain order, before he ever went abroad into the realms of nature to see minerals lying in their natural localities. As minerals discovered by the hammer and classed in a cabinet, so are words in a vocabulary—we may there learn the names, meaning, and nature—but can never discover the particular facts of their locality, associations, and natural connections, unless we examine them on the spot where they were placed by nature, united with analogous, and surrounded by dissimilar substances.

We observed, that the Abbé Gondelin has adopted a plan which had before occurred to our own minds, namely, to have a great variety of common objects, for instance, pieces of different kinds of cloth, muslin, tin, brass, &c. &c. with the name attached in some way to it, that they might be always at hand for instruction. He had them arranged in a book, and this is certainly of service, but the grand object of instruction is to give them the real use of language, as it is used by us every day, and not as a mere list of names. When once they have learned to ask the simple question, "What is this?" which they may do in the first day as well as in a year, any one can tell them the names of every object as well as the professor himself. He also made use of another plan which we had recommended to a friend engaged in the education of the deaf and dumb, to have a variety of simple plates, all representative of some scene of action or passion, &c. with corresponding stories affixed to them, every part of which should be capable of being illustrated from the pictures. The Abbé used a set of large plates belonging to Æsop's fables for this purpose, but we should think that such pictures as those in the vignettes of Bewick's Birds and Beasts would answer much better, as the stories attached to them would be more easily written, more simple, and more true. These pictures might also be used for a purpose somewhat different in teaching the pupils to write stories themselves, by shewing them the pictures, and requiring the explanation of their meaning in words.

Speaking with the Abbé one day, as to the degree which De L'Epée advanced his pupils in the knowledge of language, he said he could not believe that they learned no more than is

stated in Sicard's book, for he had been in company with one of them, who was asked what was the meaning of the word "Incapucinabilité," a word made for the occasion, but whose meaning is intelligible to any one who knows the effect of the addition of modifying syllables to primitive words. He answered entirely himself, without any assistance, that it meant "L'impossibilité d'être un capucin—L'impossibilité de se faire un capucin—L'impossibilité de devenir un capucin," which certainly comprizes the principal meaning, and shews that this pupil, at least, understood language better than Sicard supposed possible for one of De L'Epées pupils; and yet in the end of Sicard's "Cour d'Instruction," are two letters from De L'Epée himself, which seem to represent the attainments of his own scholars as very inconsiderable.

We did not receive much pleasure from the class under the care of the head master M. Guilhé, nor from those under the inferior masters. Indeed, we had not time to pay much attention to the latter, and to the former we made but one visit. It was the youngest in the school, and when we entered the room, was engaged in learning the writing and manual alphabet in the ordinary way, with its distinction into vowels and consonants, mutes and semivowels, &c. with which it seemed to us that they had no business in this stage of their instruction. They were, in fact, treading in the footsteps of all the ordinary difficulties that are needlessly opposed to children's progress.

This institution has not contributed any publication of importance to the advancement of the science of instructing the deaf and dumb. M. Guilhé has published what he calls a "Tableau Analytique des Connoissances humaines," &c. exhibiting in a tabular view, on one large sheet, the various ramifications of knowledge. We obtained a copy of this from Massieu at Paris, but, unfortunately, since lost it. It was, however, much too metaphysical, and though curious in some points, could, in our opinion, be of no value in directing the education of the deaf and dumb, or indeed of any children. The same gentleman has also since published a little pamphlet, entitled "Considérations sur les Moyens de rendre la Méthode des Sourds-muets générale et de l'approprier à tous les Pays, &c. Bourdeaux, 1818. Discours prononcée dans la Séance publique de 1818, par M. H. C. Guilhé, Instituteur en Chef," &c. This address, amidst a multiplicity of words, contains a few ideas, which, however, are not new. To these we may, perhaps, allude again.

With the Abbé Gondelin and M. Gard we were particularly intimate, and found them on every occasion most anxious to

explain to us whatever was connected with the institution, and their process of instruction. We had only to regret, that our stay at Bourdeaux was limited to about three weeks, and that the necessity of proceeding on our tour, undertaken with different and more general objects, prevented us from profiting by their experience, as much as we might have done by a longer visit. Yet we cannot but feel grateful to the cause of the deaf and dumb, for having introduced us to the friendship of the Abbé Gondelin, a man who unites superior talents with a singular degree of simplicity and unreserve, and who combines an expanded feeling of general benevolence with a sincere devotion to his own principles. "I look upon you as brothers," said he to us, when parting, "And though I am a Frenchman, and you are Britons—though I am a Minister of the Catholic Church, and you are Protestants, yet I regard not our separation and differences, but our union in heart and feelings. I regard you as the friends of the objects of our common sympathy—as those who feel with me an interest in their temporal and eternal destiny; and, in parting with you, I feel as if I were parting from brothers."

We felt the same, and learned that no difference of names can dissociate those whom community of sympathy binds together. We learned, that true benevolence is confined to no country, but is the noble and enlightened spirit of the commonwealth of Heaven—and not that narrow, local, jealous, political feeling, falsely called patriotism—which is bounded in the expansion of its love by the lines which demarcate upon the map the boundaries of its native land—and which must turn over the pages of an atlas before it can tell whether or not the *man* in misfortune be a brother or not.

*(To be continued in our next.)*

# ANALECTA.

## 1. *Lymphatic Vessels in Birds.*

We have been allowed to peruse a Memoir by M. Magendie on this subject, in which he denies the existence of chyliferous lymphatics and thoracic duct in birds. Before the middle of the last century the presence of these vessels had not been detected in birds, fishes, or reptiles. In 1768 Mr. Hewson announced his having discovered them in birds, and gives a minute description, and engravings of them as they appeared in the Goose. According to his account, these vessels arise from the inferior extremities and intestinal canal, unite over the cœliac trunk, where they form a considerable plexus, from which two large trunks, like two thoracic ducts, ascend and terminate in the subclavian veins. During the whole of their course they do not meet with any gland as they do in man, and other mammalia. He also describes the lymphatic vessels in the neck, which terminate also by two distinct trunks in the subclavian veins, near the insertions of the thoracic ducts. These, however, pass through several lymphatic glands in their course as in man. Mr. Hewson acknowledges John Hunter to be the discover of these last vessels. As it appeared extraordinary that so skilful and ingenious an anatomist as John Hunter, after having discovered the lymphatics of the neck, should not in the course of his researches have detected the lacteals and thoracic duct, which must have been much more evident to the senses, M. Magendie resolved to examine by dissection the lymphatic system of birds. Mr. Hewson having exhibited the lymphatics of the Goose, M. Magendie made this bird the subject of his researches. He had no difficulty in discovering the lymphatics of the neck, forming on each side of the cervical vertebræ, a trunk of the size of a pigeon's quill, containing a transparent lymph, and after traversing several glands, terminating in the subclavian veins. In extending the dissection to the thorax and abdomen however, he was unable to detect any trace of thoracic duct or lymphatics in the mesentery, or any other part of the abdomen. The dissections were repeated on the same animals, and on fifty birds of different kinds, and at different periods; but the only traces of a lymphatic system which could be discovered were the vessels of the neck, and the glands, such as are met with in the mammalia.

M. Magendie is perfectly satisfied with the accuracy of his own dissections, and supposes that Hewson was deceived by the appearance of the nerves, which in birds are large, numerous, and semitransparent; and from the vascular appearance which they assume, might be mistaken for lacteals, unless traced, as they were by M. Magendie, with the scalpel, to their origin. It is not so easy to account for the deception with regard to the thoracic duct. There is no vessel proceeding from the abdomen to the subclavian veins which could give rise to the mistake. The only anatomical arrangement which might deceive Mr. Hewson, is the canalis arteriosus, which proceeds from the aorta to the pulmonary arteries, and lies over the subclavian vein; but as these canals are entirely obliterated soon after birth, it is impossible that they could have been injected. M. Magendie intends in a future Memoir to shew that fishes and reptiles, as well as birds, are unprovided with lymphatic vessels, and that the organs described under that name by Hewson and Monro, are merely veins—a fact which tends to support the opinions already advanced by this physiologist, that the veins of the mammalia are endued with absorbent powers, and that they, and not the lymphatics, take up fluids from the alimentary canal.

## 2. *Vaccination in France.*

We have received the Report made to the Central Committee of Vaccination in December, 1818, on supposed cases of small-pox occurring after vaccination. This important document is drawn up by M. Salmade, one of the members of the committee, and is signed by Chaussier and Husson. It begins by observing, that the season of the year and the state of the atmosphere having for some time rendered chicken-pox more prevalent than usual, and many cases of this disease bearing some resemblance to small-pox, the prejudices against the cow-pox began to be renewed, and reports were propagated respecting these cases, which could not fail to have the worst effect on the credulous and superstitious. Notwithstanding that similar reports had been on a former occasion enquired into, and discovered to be unfounded, the investigation was on this occasion renewed, and terminated in the same satisfactory manner; every step of the inquiry furnished additional proof of the security which the cow-pox affords against the small-pox. Three cases are described which occurred in Paris, which fell under the observation of the reporters, and which, from the acuteness of the first symptoms and subsequent copious eruption, were supposed to be small-pox. But the progress of the complaint completely falsified this opinion. However severe the primary fever is, the eruption becomes general over the body at the end of the first or second day, and proceeds with such rapidity, that desiccation commences on the fifth, and is completed by the ninth day of the disease, without any suppurative fever. Accounts have been transmitted from various Departments, of a similar complaint prevailing epidemically, under the influence of the same hot and dry state of the atmosphere, but which the Central Committee do not consider of a variolous nature.

The investigation, in the opinion of the reporters, has afforded a fresh triumph for vaccination over the ignorance and malignity of its detractors.

As this chicken-pox, or spurious small-pox, is so liable to be mistaken by careless observers for the true small-pox, it is of great importance that the characteristics which distinguish the two diseases from each other should be fully established. The distinguishing features of the two diseases are delineated in the Report with great clearness and correctness; and the Central Committee have recommended that two thousand copies of it be printed, to be distributed with the packets of lymph supplied by the Committee.

## 3. *Pyro-Mucous Acid.*

Sugar of milk, treated with nitric acid, gives an acid (Saccho-lactic), which was discovered by Scheele, and which has since been called mucous acid from its being likewise produced from mucilage or gum. Exposed to heat, a saline, brownish, odorous matter is sublimed, which burns with a flame on coals, and dissolves in water and alcohol, according to Trommsdorf, the acid which sublimes is similar to succinic, the liquid acid to pyrotartaric. M. Houton-Labillardière, conceiving that the characters attributed by Trommsdorf to the succinic acid were very different from those which it really possesses, has read a Memoir to the Institute, in which he proves that the pretended succinic acid is a new acid which he proposes to call Pyro-mucous.

When freed from the oil and acetic acid which it contains, it easily crystallizes, is white, and inodorous; possesses a strong acid taste, and melts at 130 cent.; becomes volatile at a higher temperature, does not attract moisture from the air, dissolves easier in boiling than in cold water, and resolved into its constituent parts, gives nine parts of carbon, three of hydrogen, two of oxygen. M. Houton-Labillardière carefully describes the combinations of this acid with different salifiable bases, and all the phenomena reported tend to confirm the opinion of this able young chemist.

## 4. *Cochineal.*

M M. Pelletier and Caventon have lately made some experiments upon this singular insect, which, from the colouring matter it contains, forms such an important article of commerce, and which has not been observed with the attention it deserves. They have discovered that the colouring matter, which forms the chief part of it, is mixed with a particular animal matter, a fat resembling ordinary fat, and with different salts. After removing the fat by ether, and treating the residue with boiling alcohol, they allowed the alcohol to cool or gently evaporate, and thus obtained the colouring matter, mixed with a very little fat only and animal matter, which is separated by dissolving it again in cold alcohol, which leaves the animal matter, and then precipitating the colouring matter by ether. It is thus procured in a state of great purity.

This *carmine* melts at fifty degrees, swells up, and becomes decomposed without giving ammoniac; it is very soluble in water, little so in alcohol, and not at all in ether, without the assistance of fat. Acids cause it to pass from a crimson to a bright red and yellow. Alkalis, and generally all the protoxides, cause it to assume the violet; alumina separates it from the water. These experiments explain many circumstances which occur in the arts of the dyer and colour-maker. Lake is formed of carmine and alumina; it possesses the natural colour of carmine, which is crimson. Carmine is a triple compound of animal matter, of carmine, and of acid which heightens the tint of it; it is the action of muriatic acid which converts the crimson of cochineal to the scarlet.

## 5. *Delphinic Acid.*

M. Chevreul has been continuing his experiments upon fatty bodies. After proving that the matter of biliary calculi, which he calls cholerestine, does not form a soap with the alkalis, he thought he perceived that spermaceti (or *cetine*) was resolved by the action of alkalis into an acid analagous to one of those which are formed by alkalis with fat, particularly the one called *margaric.* This he denominated cetic acid. Subsequent experiments, however, convinced him that it was nothing but margaric acid, disguised by the remains of fat. But, dolphin oil treated by M. Chevreul's method, i. e. converted into soap by alkalis, really gave, independently of the two acids which all fatty matters yield, an acid of a third species, to which he has given the name of delphinic. Common oil does not produce these results. We may remark, that oxygen cannot be demonstrated in these new ternary acids, which are derived from fatty matters, and that they bear the same relation to the ordinary vegetable acids, which in the mineral kingdom the *hydracids* have to the mineral acids, such as nitric, sulphuric, &c.

## 6. *Loss of Voice from a Gun-shot Wound.*

A Prussian Major received a wound from a musket-ball, at Namur, on the 17th of June, 1815, by which the right clavicle was driven inwards, and the upper part of the trachea, and the lower and anterior part of the larynx were injured. The ball was coughed up immediately from the irritable membrane with which it had come into contact, along with a large quantity of blood. After the battle and evacuation of Namur by the French, the patient was carried into that town. His wound healed in a few weeks, but with the loss of his voice. He repaired to Aachen, but after using the baths there for some weeks, he remained in the same state. His medical attendant, Dr. Francke, Prussian Regimental Physician, concluded that the nerves of the larynx had sustained some organical injury. The patient complained of an exceedingly painful feeling in the cicatrice of the wound, and in the parts immediately surrounding it. When the finger was brought even only near the cicatrice, he experienced a severe pricking sensation there, obliging him

to cough, and continuing till the finger was removed. If the cicatrice was touched, he bent himself back from pain, and expressed great anxiety. Externally, the part was not inflamed. If the finger ran along the skin, by the side of the sterno-cleido-mastoid muscle, from the cicatrice towards the mastoid process, cough and severe pain were produced. The patient had also a slight but continued catarrhal inflammation of the uvula, tonsils, posterior part of the pharynx, and epiglottis. This might be attributed not so much to the disease, as to the efforts of the patient, for though now almost driven to despair, his lively character and impatience urged him to continual attempts to produce some articulate sounds.

Dr. Francke was still led to hope for a cure, from the results of Arnemann's experiments upon the regeneration of nerves. He did not trust, however, entirely to time, but endeavoured to remove the inflammatory state in which the deep-seated parts still appeared to remain, and to relieve the pain by which that state was accompanied. These intentions he partly fulfilled, by exciting a superficial inflammation on the neck. Morning and evening, a quantity about the size of a bean, of Cirillo's mercurial ointment was rubbed in over the pained part. After some days, a pustular eruption was thus produced, and underwent suppuration. The former ointment was now changed for Autenrieth's. For four weeks uninterruptedly, the patient took internally a grain of calomel and as much sulphur stibiatum aurantiacum, morning and evening. This remedy was then stopped for a few days, and afterwards resumed. During its use, the erysipelatous redness of the mouth and throat continued, with some pain, and an increased glandular secretion, but without any inconvenient ptyalism. Laxatives were given, to obviate costiveness and hæmorrhoids. The patient made frequent use of the infuso specierum ad gargarisma cum melle rosato. This treatment was continued from the beginning of August till near the end of September.

Towards the end of September, and to the great joy of the patient, a striking amendment took place. The pain in the neck abated, and the power of speech began to return. The patient could now pronounce the vowels *a* and *o* pretty distinctly, for instance, in the words *Doctor* and *Aachen.* The consonants were gradually added; and the patient now becoming able to relish the sweets of society and the fine scenery of Aachen, his hope of recovering his voice grew every day stronger. In the beginning of October, he could be pretty well understood, even by strangers. The calomel and antimony were now laid aside, as was also the ointment of Autenrieth, which had been continued once a day during the last fourteen days of September. In the end of October, the major left Aachen to join his regiment, then forming part of the Army of Occupation in France, though his speech was not yet perfectly distinct. In July following, Dr. Francke met his patient accidentally when on the road to Verdun, and found him well, in good spirits, and able to give the word of command as loudly as ever.—*Rust's Magazin fuer die gesammte Heilkunde. Fuenften Bandes. Zweites Heft.*

## 7. *Rupture of the Inferior Vena Cava.*

Dr. Starcke relates, that in the end of October 1818, a serjeant was admitted into the Field-Hospital, at Fains, over whose abdomen the wheels of a heavily laden waggon had passed. On his admission, his pale countenance, the coldness of his extremities, his difficult and painful respiration, his languid appearance, and the frequent faintings which he experienced, indicated some considerable injury of the contents of the abdomen, and gave rise to a suspicion of an internal hæmorrhagy. Every thing which art could suggest by way of remedy, was employed in vain. The patient died on the second day after his admission.

On inspection of the dead body, not only traces of violent contusion and commencing inflammation were seen in the colon, duodenum, pancreas, &c. but also the inferior vena cava was found ruptured, opposite the eighth dorsal vertebra, by which a considerable quantity of blood had been extravasated.—*Rust's Magazin fuer die gesammte Heilkunde. Fuenften Bandes. Zweites Heft.*

## 8. *Self-Castration.*

At three o'clock in the afternoon of the 16th of March, an under-officer of artillery, a quiet and excellent man, came, without any special motive, to the insane resolution of extirpating both his testicles. In order to accomplish this purpose, he made an oblique incision through the right side of the scrotum with a penknife; he then pushed the testicle through the opening, separated it from its connexions as high as he could, drew it out, cut across the chord close to the scrotum, and threw the testicle out of the window. The violent hæmorrhagy which followed, and the pain of this operation prevented him from pursuing his resolution, and removing the left testicle. On the contrary, he attempted to check the bleeding, and immediately made use of what seemed to him a sufficient precaution for this purpose. He wrapt up the scrotum in dry handkerchiefs, and lay down in bed. He had remained in this state for about an hour, when the continued hæmorrhagy made him so anxious, that he resolved to close the wound of the scrotum by means of a needle and thread, in order to stop up, as he imagined, the source of the bleeding. With a common sewing needle then, and a linen thread, upon which he carefully made a knot, he sewed the divided scrotum completely together, betook himself again to bed, and lay still.

One of his comrades, who by chance came to visit him, was astonished to find the floor every where soiled with blood, and on enquiring into the cause of this and of his illness, received for answer, that he had cut his hand accidentally. He would have instantly gone for medical assistance, but this the patient forbade. At last, however, his situation began to alarm him, and he sent for Dr. Deetz, Garrison-Staff-Physician to the Fortress at Wesel. This gentleman could not, at first, be found, and another surgeon was called in. It was now about eight o'clock, and the patient was by this time weak and faintish, his countenance pale, his pulse small, and his look full of reserve. He said that he had fallen from a ladder, and bruised his testicles, upon which they had become so painful, that he had come to the resolution to remove them.

He was immediately conveyed to the hospital. The scrotum was distended to the size of a child's head, by the coagulated blood effused from the spermatic vessels. As no fluid blood was now discharged between the sutures, but the hæmorrhagy appeared to have ceased, and as the patient was weak and faintish, it was judged better not to open the scrotum that day. A potio nitrosa cum opio was administered, and aromatic fomentations were assiduously applied. No hæmorrhagy took place during the night. The patient slept a little.

When Dr. Deetz saw him next morning, he found him without any considerable pain, with a weak slow pulse, and in other respects pretty well. The swelling of the scrotum had not increased since the evening before, and this seemed to prove that the bleeding had completely ceased. The suture was now removed, and the wound of the scrotum laid open, that the extravasated and coagulated blood might be removed, and the chord tied, if this should appear necessary. After the blood was removed, Dr. Deetz looked in vain for the chord. It appeared to have retired into the abdomen. In vain he carried his fingers even to the ring; the chord could neither be seen nor felt. A small quantity of coagulated blood issued from the ring on withdrawing his finger, and convinced him that blood was extravasated into the abdomen.

The good constitution of the patient overcame the disadvantageous circumstances in which he was placed. He remained free from hæmorrhagy, the coagula which could not be completely removed were absorbed, and suppuration took place in the wound. On the 3d of April, the patient was regarded as cured, and on the 10th was dismissed.

We may observe upon the treatment of this case, and indeed, Dr. Deetz, who relates it in the second number of the fifth volume of Rust's *Magazin*, appears to hint the same thing, that on the evening of the accident, the scrotum ought to have been laid open, and the chord searched for: at any rate, that instead of aromatic fomentations iced poultices ought to have been applied.

### 9. *Extirpation of the Penis according to a new Method.*

A man, aged 60 years, was admitted into the surgical hospital of Gottingen with schirrous penis, the whole of it being extremely hard and much enlarged. At several places there were openings, from which a watery fluid was discharged. The induration extended as far as the symphysis pubis. In the situation of the bulb of the urethra a stone-hard swelling was felt, of the size of a walnut. The penis was in the highest degree painful; and although the patient constantly wore a catheter, to evacuate his urine was very troublesome to him. The induration had first begun at the corona glandis after a blenorrhœa urethræ. The disease had continued for a year when the patient was admitted. Several cases had occurred to Professor Langenbeck, under whose care the patient was now placed, in which induration of the corpora cavernosa had remained after blenorrhœa of the urethra accompanied by frequent and painful erections, and had yielded to warm volatile poultices and mercurial frictions. These means were of no service in the present case. Several new places gave way, and formed carcinomatous degenerations. The pain was so great, and the patient's strength had sunk so much, that he himself desired the removal of the affected parts.

The question now was, how the retraction of the penis was to be obviated, in order that the vessels might be tied, seeing that the disease extended to the symphysis, and that the induration in the situation of the bulb rendered an extirpation necessary rather than an amputation. It is known, that the penis, if amputated near the symphysis, retracts so much under the common integuments, that the vessels cannot be tied, and a fatal hæmorrhagy may take place. Ioerdens relates a case in the first number of the third volume of Loder's Journal, in which the stump retracted under the arch of the pubis, and a bleeding took place which had nearly proved fatal. With much difficulty three of the larger arteries were laid hold of by the forceps, and tied. Sponge-tent, covered with gum-arabic, and moistened with a styptic liquor, a plug of charpie, a multitude of pledgets, compresses, and continued pressure with both hands, were scarcely sufficient, after half an hour, to stop the flow of blood. Schmalz relates a case in the fourth number of the first volume of the same Journal, in which the stump retracted two inches under the common integuments, so that the arteria dorsalis only could be tied. In order to check the bleeding, the cavity was filled with plugs, and a compressing bandage applied, over which pressure was kept up by the hand of an assistant for 24 hours. The bleeding was thereby stopped; but not till the patient had lost two pounds of blood. In one case, B. Bell was persuaded not to tie any arteries, but to trust to compression alone; but an hour or two after the amputation, so profuse a hæmorrhagy took place that the patient died.

The older surgeons, and even Heister, dreaded hæmorrhagy so much, that they proposed to remove the penis by the gradual operation of a ligature. Loder observes, in the first volume of his *Beobachtungen*, page 80, that this method will not be followed by any one at the present day. B. Bell says, that though it be true that the diseased part will fall off six or eight days after the application of the ligature, it is still much easier, as well as safer, to employ the knife. In later times, the ligature of the penis has again been practised by the celebrated Graefe, of Berlin, and the manner of application has been described by Dr. Biener, in his *Dissertatio de extirpatione penis per ligaturam*. Graefe employs a particular instrument for this purpose, which he calls an *instrumentum ligatorium*, and of which a figure is given in Dr. Biener's Thesis. Professor Langenbeck holds the ligature of the penis to be superfluous; as wherever the ligature can be applied, the operation may be performed with the knife, and there can be no danger of the penis retracting itself if the practice which he has adopted be followed. There are cases, indeed, where the use of the ligature is impossible, and an extirpation with the knife only can be performed. One of these cases is, when the induration extends to the symphysis. The skin passing from the symphysis to the back of the penis hinders the application of the ligature, which always slides forwards

and does not rest behind the indurated part. A second case is, when there is induration on the inferior side of the penis extending towards the bulb. The skin passing from the scrotum to the penis hinders the application of the ligature in this case. It is probable, also, that the ligature of the penis will produce severe pain and swelling, or even that convulsions will follow its application.

The method of amputating the penis recommended by Schreger, in the first volume of his *Chirurgische Versuche*, appears to possess the advantage of at least great safety. In this method, the back of the penis is first cut through, and before we go deeper, the arteria dorsalis is tied. Then the remaining part is divided, and the arteries of the corpora cavernosa are taken up. Yet even when the integuments are left undivided after the urethra has been cut across, the stump may retract so far, that it will be difficult or impossible to tie these arteries. And after all the vessels are tied, the stump will retract itself, if the operation be performed near the symphysis. By what means, then, if a secondary hæmorrhagy should take place, can the penis be drawn forwards, in order to stop the bleeding?

Professor Langenbeck operated in the following manner, in the case related at the beginning of this article. An assistant pressed with his fingers against the perinæum and against the arch of the pubis. The penis being thus compressed, no considerable bleeding could take place, and the retraction at least would be prevented. In order not to leave too much skin, it was drawn forwards, and an incision was now made close to the symphysis through the back of the penis to the corpora cavernosa. This incision was so deep as to divide the arteria dorsalis, without wounding the arteries of the corpora cavernosa, and to bring into view the white edge of the firm fibrous membrane which envelopes the corpora cavernosa and the white edge of the septum. Through this envelope and through the septum, Professor Langenbeck put a ligature, so far from the edge that it should not tear its way out; and having thus formed a loop by means of which he drew forwards the penis, he divided its remaining connections. The stump was now so firmly held by means of the loop, that not the smallest retraction could take place. It was drawn out from the integuments, until the round and very hard tumour near the bulb was reached with the knife, and extirpated. Unless the penis had been so drawn out from its retreat, it would have been impossible to have removed the whole of the diseased parts. No ligature could have applied in the manner of Graefe behind the round and very hard tumour, as this extended even into the scrotum. After the first incision into the back of the penis, and the insertion of the loop, Professor Langenbeck laid hold of the arteria dorsalis with the forceps and tied it, before proceeding to the other steps of the operation. From the protrusion effected by means of the loop, this was done very easily. Besides that vessel, two scrotal arteries, one of the arteries of the corpora cavernosa (the other not springing) and an artery of the corpus spongiosum urethræ, were tied. Over the stump, charpie with styptic powder was laid, and then compresses and a bandage were applied. No tube was placed in the urethra. The loop was fixed by adhesive plaster to the surface of the abdomen. No hæmorrhagy, nor any other accident, took place. The healthiest granulations rose from the stump. The evacuation of urine went on without any tube. The patient could at last make water in a stream, and was dismissed completely cured. Had any bleeding taken place, the stump could have been drawn forth by means of the loop. *Langenbeck's Neue Bibliothek fuer die Chirurgie und Ophthalmologie. Erster Band. Viertes Stueck.*

## 10. *Sudden Paralysis and Apoplexy from a Tumour in the Brain.*

In March, 1818, a grenadier at exercise was suddenly affected with paralysis of the whole left side of the body. He recovered so far as to be able to move about, and take long walks. He returned from one of these on the 25th of August of the same year, felt fatigued, lay down in bed, and while joking with his comrades around him, suddenly expired. On dissection, an encysted tumour, the size of a large pigeon-egg, was found before the thalamus nervorum opticorum, and lying

upon the right optic nerve. The consistence of the brain was natural, but the vessels of its membranes, particularly of the pia mater, were gorged with blood. *Rust's Magazin fuer die gesammte Heilkunde. Fuenfter Band. Erstes Heft.*

### 11. *Poisoning from Arsenic.*

In the same number of Rust's *Magazin* there is an official report of the examination of the body of a woman, who was supposed to have died from poison. The presence of arsenic, in a state of solution, was detected in the contents of the stomach and intestines, but from these contents it could not be obtained in the solid form. In order, if possible, to procure this decisive proof, the œsophagus, stomach, and intestines (on the inner surface of which no trace of any thing in the form of a powder could be perceived with the microscope) were boiled in a solution of caustic potass; this was afterwards strained, the potass saturated with nitric acid, and lime water added to it, when a precipitate which, when dried, weighed 40 grains, was obtained. From this precipitate, after adding boracic acid and charcoal, three grains of solid arsenic were obtained by sublimation. The whole case is interesting, and we shall in our next detail it at length.

### 12. *The Cow Tree.*

M. De Humboldt has lately read a very interesting Memoir to the Academy, in which he gives a description of this tree, and of the juice which it affords. Its name was given it by the Spaniards, from its differing from the Euphorbia and most other milky plants, in furnishing a wholesome and agreeable milk. As M. De Humboldt did not see it in flower, he cannot determine the genus of it. Its stature is elevated. The leaves are alternate, coriaceous, pointed, and marked with lateral and parallel fibres. When incisions are made into it, milk exudes, having a very agreeable balmy smell The negroes use it as an article of food, and it has a sensible effect in fattening them. Exposed to the air, pellicles form on the surface, which assume, when dried, somewhat of the elasticity of caoutchouc, and a coagulum is separated, which becomes sour and forms cheese. Our author then proceeds to some general considerations on the different vegetable milks, the injurious qualities of which depend on certain poisonous principles.

### 13. *Zoology.*

The Count de Lacépede has lately made considerable additions to the *cetaceæ* the descriptions of which are taken from some elaborate paintings sent from Japan, by Mr. Titsuig. They consist of the following species, which have never been before noticed by any European naturalists. Two *balænæ*, properly so called, that is, without the dorsal fin, four *balænopteræ*, or *balænæ*, with a dorsal fin, one *physeter*, or *cachalot*, also having a dorsal fin, and one dolphin. Thus eight new species are added to the cetaceæ, which, in the Count's last work on that class, amounted but to thirty-four.

Monsieur Cuvier has made some interesting observations on a head of an adult ouran-outang, which has been recently received from Calcutta. He has remarked that those heads of ouran-outangs which have hitherto been described by writers, have been all of them so young as not to have changed their teeth. In that which he has presented to the Academy, the jaw is much more projecting, and the forehead recedes in proportion. These and other circumstances will, it is probable, lead to the conclusion, that some other apes which, from the form of the scull, &c. have been described as distinct, are, in fact, adult ouran-outangs.

M. Cuvier has also shewn the figure of a Tapir, from Sumatra, now in the menagerie of the Marquis of Hastings, Governor-General of India. It differs from the Tapir of America, in the whitish colour of part of the back, as well as in the dark brown colour of the rest of the body. It appears that this species of Tapir inhabits not only Sumatra, but also India beyond the Ganges. The communication from which this memoir is extracted, was sent to Mons. Cuvier, by M. Diard, a young naturalist, now pursuing scientific researches in India.

# QUARTERLY LIST OF NEW PUBLICATIONS.

## ANATOMY AND PHYSIOLOGY.

De Felici, sulla struttura del tessuto cellulare. Pavia.

Penolazzi, sulla teoria dell' irritazione. Padova.

Rachetti, V. Della struttura, delle funzioni e delle malattie del midollo spinale. Milano.

Rouzé, J. L. M. Nouvelle Physiologie Médicale, ou Simple Exposition de la manière dont se forment, vivent et meurent les appareils de l'homme. Paris.

Ruuoni, Anatomia degli organi della circolazione delle larve.

## BOTANY.

A. Bisso et A. Poiteau, Histoire Naturelle des orangers. IVe. livraison. In 4to. de trois demi-feuilles, plus 6 pl. Nice, Versailles, Paris.

Alberti, A. Flora Medica. Milano.

Benore, M. Flora Neapolitana. Napoli.

Bertoloni, Observationes Botanicæ. Bologna.

Boullay, P. F. G. Dissertation sur l'histoire naturelle et chimique de la coque du Levant (menispermum cocculus. Paris.

Candolle, M. A. P. Théorie élémentaire de la botanique, ou Exposition des principes de la classification naturelle et de l'art de décrire et d'étudier les végétaux. Seconde édition. Paris.

Saint-Hilaire, Jaume, Plantes de la France, ou naturalisées et cultivées en France; décrites et peintes d'après nature. Deuxième partie. Ve. livraison. In 8vo. Paris.

Savi, sopra una pianta cucurbitacea, &c.

## CHEMISTRY, MATERIA MEDICA AND PHARMACY.

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## MEDICAL JURISPRUDENCE.

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Lunding, de exploratione chemica veneficii per arsenicum facti. Copenhagen, 8vo.

## MEDICINE AND SURGERY.

Annales Cliniques de la Société de médecine pratique de Montpellier. Rédigées par une commission présidée, par J. F. V. Bonnet. Deuxieme série. Tome III. Nos. IX. et X. de la 15e année.

Balme, M. Traité historique et pratique du scorbut chez l'homme et les animaux; dans lequel se trouvent des Observations intéressantes sur le traitement de quelques maladies, comme de la vénérienne, de la scrophuleuse, &c. In 8vo. de 21 feuilles et demie. Lyon.

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Programme des Opérations chymiques et pharmaceutiques proposées par le jury médicale du département de la Seine-Inférieure pour réception de pharmacien, No. 39, 40, 41, 42, 43, 44, 45, et 46. Rouen.

Rapport du comité du dépôt de vaccin séant à l'Hôtel-Dieu de Marseille, à M. le comte de Villeneuve, préfet du département des Bouches-du-Rhône. 8vo.

Rapporto sulla febbre pettechiále curata nell' Istituto clinico di Napoli.

Ricotti, Storia di una rara malattia nervosa. Pavia.

Scavini, G. M. Sulla gotta, e sui gottosi, cenni patalogici. Torino.

Timoleon Dussi, V. P. Hommage au cercle médical. Guirlande à son président honoraire perpétuel, A. Portal. Paris.

Tisco, Giuseppe, Saggio dell' Istituto clinico Romano di medicina esterna.

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NOTICE TO CORRESPONDENTS.

The length of the Continuation of the Article on the Deaf and Dumb prevents our inserting it in the present Number. It will certainly appear in the next.

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THE

# QUARTERLY JOURNAL

OF

# FOREIGN MEDICINE AND SURGERY.

AUGUST, 1819.

Art. I. 1. *Commentarius de Structura Peritonaei, Testiculorum Tunicis, eorumque ex Abdomine in Scrotum descensu ad illustrandam Herniarum indolem. Auctore C. J. M. Langenbeck, Medecinæ et Chirurgiæ Doctore, Exercitus Hannoverani Chirurgo generali, Britanniarum Hannoveræque Regi ab Aulæ Consiliis, Anatomes et Chirurgiæ Professore Publico Ordinario in Universitate Literaria Georgia Augusta, Nosocomii Chirurgici Gottingensis Directore.* Gottingea, 1817.

2. *Recherches Anatomiques sur les Hernies de l'Abdomen; Thèse presentée et soutenue à la Faculté de Médecine de Paris, le* 17 *Juillet* 1817, *pour obtenir le grade de Docteur en Médecine, par Jules Clocquet, Prosecteur à la Faculté de Médecine de Paris, Ex-Chirurgien Interne des Hopitaux Civils de la même ville, Membre de la Société d'Instruction Médicale, &c.*

There is not in the whole extent of anatomical investigation any one subject which has so much occupied the attention of writers in this country as Hernia. Though great difference of opinion still exists upon the anatomy, yet so tired are English surgeons of the subject, that were new works to appear upon the Fasciæ at the groin, we are convinced that they would excite little or no interest. In Germany and France the surgeons are but beginning to investigate this question.

We have now before us two new works on the subject; the one so splendid as at first sight to appear intended to rival the magnificent publication of Mr. Cooper. It is by Mr. Langenbeck, Professor of Anatomy and Surgery in the University of Gottingen, and Surgeon-General of the

Hanoverian Army. The other is a quarto, of one hundred pages, with plates, by M. Jules Clocquet, *Prosecteur* to the Faculty of Medicine in Paris.

The work of Professor Langenbeck is one of those books which attracts by the beauty of the plates, and which might appear very accurate anatomy to those who pursue their studies more on the reading desk than on the dissecting table; but to one who is conversant with the subject, it is at once obvious that they are views which a dexterous dissector might make with a good deal of clipping and shaping, but which no student could follow with the knife, without being first initiated into the mystery of fascia making. So much is there of the *trick* of dissection required, to copy Professor Langenbeck, that we suspect our friends in Gottingen will be more puzzled in their dissections by following him, than even we are in London, in attempting to follow the descriptions of some of our own authors.

We insert the Preface to this work, and from it our readers will be able to form an idea of the objects which the author had in view, in publishing this splendid book. How far he has succeeded in settling the points which have been so long the subject of discussion, we shall afterwards endeavour to shew.

"I had for a long time investigated the Anatomy of the Processes of the Peritoneum, and their connection with the testicle, under the belief that the great problem of the descent of the testicle and the origin of its various coats, might be best solved by carefully examining the peritoneum itself. I endeavoured to apply my observations to the morbid state of the body, and by doing so, I have not only been able to explain many phenomena of disease, but I have acquired an accurate knowledge of herniæ, both congenital and accidental.

"Although many anatomists have investigated this subject, still many points remain undetermined, for they have not accurately stated the question, whether the peritoneum be a single membrane or one composed of several laminæ—how the descent of the testicle is accomplished—whence the testicle and spermatic cord receive their coverings—how the testicle within the cavity of the abdomen is connected with the spermatic vessels without—what the Gubernaculum of Hunter is—or how it occurs that the peritoneum becomes so connected with the abdominal ring after the descent of the testicle that no external opening exists—how herniæ arise, and what forms the herniary sac?

"All that I now publish is deduced from the examination of dead bodies, and so confirmed by many dissections, that I am perfectly persuaded of the truth of my statements. Indeed, the preparations from which the plates are taken, prove the facts."

The first section is entitled Consideratio Structuræ Peritonaei;

and of this, forty pages contain extracts from the old anatomists upon the question—whether the peritoneum be a single or a double membrane. As on most other questions of this kind, the author brings forward nearly an equal number of authorities on each side. Many of our best authors describe the peritoneum as a single membrane. Haller, in his Elementa Physiologiæ, says, "there are not two laminæ of the peritoneum: this has been proved by Winslow and Douglas, in opposition to the doctrines formerly taught in the schools;" but our author, from his own observations, which are supported by the authority of Columbus, Cowper, and Wrisberg, comes to the conclusion that the peritoneum is a double membrane. But so generally received is the doctrine of Haller and Soemmering, in this country, that if candidates for diplomas from our colleges, were to describe the relative situation of the peritoneum and viscera, upon the authority of Professor Langenbeck, we believe that the examiners would be not a little astonished to hear that the kidnies, ureters, bladder, aorta, vena cava, &c. were all within the peritoneum; for, according to the description of the Professor, the peritoneum is composed of two sacs, and between these he puts all the parts we have just mentioned. This leads to great confusion; for the internal layer of Professor Langenbeck, is that which in this country we understand to be the peritoneum, and his external sac is nothing more than the cellular membrane, which connects the peritoneum to the muscles, viscera, &c. This he describes as a proper membrane, having an origin from the ligaments of the vertebræ, and connected by cellular membrane to the internal lamina. We suspect we are correct in supposing this to be nothing more than the common cellular membrane, when we find the Professor himself have so much difficulty in deciding whether there be any perforations in it for the transit of the vessels, as the following quotation will shew:—

"Quodsi partes commemoratæ intra laminam peritonei externam sitæ sunt, quæri potest; quomodo hæ progredientes ex ea exeant; quomodo vasa magna cum ramis suis, nervique cum ramificationibus e lamina externa prodeant; quomodo nervi dorsales et lumbales in laminam externam deveniant; qua via œsophagus ad ventriculum perveniat, intra laminam peritonaei internam situm? An forte in lamina externa foramina sunt?"

We are referred to the elegant plates in the folio volume as proofs of the truth of the author's conclusions, but we assert that we never saw in the course of our dissections, any thing similar to what is there represented. What he calls the

external layer is marked as distinctly as the proper peritoneum, and in the plate of the section of a child's scrotum, the cut margins are as accurately defined as if they had been made of leather or prunello.

Although forty-four pages are occupied in the first section, by the discussion of the question whether the peritoneum be a single or a double membrane, we shall not detain our readers longer upon it, but only quote the last paragraph, which will be a sufficient example of the confusion the Professor would lead us into.

"Duæ lamellæ peritonaei, ope telæ cellulosæ conjunctæ, descendunt usque ad vesicam urinariam, in qua separantur, sic, ut lamina externa super ejus verticem transeat, in facie anteriori descendat annectatque vesicam ad symphysin ossium pubis, et, qua processus cellularis, infra arcum ossium pubis abeat ad musculum acceleratorem urinæ, tunc penis corpora cavernosa involvens; lamina vero interna, in ea regione ab externa separata, in vesicæ urinariæ posteriore superficie, ad promontorium vergente, descendat, cum tunica vesicæ musculari conjuncta, plicam semilunarem Douglasii formet, faciem intestini recti anteriorem superducat, sacciformem uterum involvat, ejusque ligamenta efficiat. Qua ratione videmus, vesicam urinariam, vesiculasque seminales cum ductibus deferentibus intra duas lamellas peritonaei jacere."

The second section is upon the situation of the testicle in the abdomen before birth, and upon its descent into the scrotum.

"If we believe," says Professor Langenbeck, "that the testicle is situated within the peritoneum, and the cord on the outside of it, then we shall have great difficulty in explaining how the spermatic cord is united to the testicle, but if we will allow the peritoneum to be double, then all the difficulty ceases."

But we do not say that the testicle in the fœtus is situated within the peritoneum, but that it is covered by a portion of peritoneum in the same manner as the intestines. The vessels pass into the posterior part of the testicle behind the peritoneum, and the same relation of parts exists during life.

Instead of conceiving the difficulties of this question to be removed by Mr. Langenbeck, we think them increased tenfold. To any one who has examined the sketches in Mr. Bell's Anatomy, the relations of the peritoneum to the testicle must be sufficiently plain; but here we are so overwhelmed by Professor Langenbeck's doublings and contortions of this delicate membrane, that we become quite bewildered in endeavouring to follow his descriptions.

Some of the terms used by Professor Langenbeck are obsolete

in this country; and here we may be permitted to make some remarks upon the nomenclature of the coats of the testicle. It is very common to hear the terms tunica vaginalis communis, tunica vaginalis propria, tunica vaginalis reflexa, and tunica albuginea. When the testicle has descended into the scrotum, the portion of peritoneum which passes before it, forms a bag, which when opened, appears to contain the anterior part of the testicle: this bag is by the best authorities called tunica vaginalis.* The tubuli of the testicle are covered by a fibrous texture which has been called tunica albuginea, but we can never see this as a distinct tunic, except on the back part of the testicle; for while the gland is yet within the abdomen, the anterior part receives a covering of peritoneum which it retains during life, and this is so closely connected to the fibrous texture that they cannot at any period of life be separated from each other, except after maceration, and then the appearance of the fibrous part under the peritoneal covering is not such as would deserve the name of albuginea. We suspect that the name albuginea was originally a surgical term given to the white dense and smooth appearance which the testicle has when the sac of a hydrocele is opened. We find it observed in Warner's Treatise on the Testicle, that the "*Tunica Albuginea,* so named from its complexion, is a compact, firm, white, strong, and smoothly polished membrane, having a tendinous appearance;" and Pott in speaking of Hydrocele, says, "This fluid in the natural and small quantity serves to keep the tunica albuginea moist, and to prevent a cohesion between it and the tunica vaginalis."

It is the term vaginalis reflexa which we object to, for it is given to that part of the peritoneum which covered the testicle, previous to its descent, and consequently before that which we call the tunica vaginalis was formed. The use of the term leads to great confusion, for none of our surgical writers, in describing hernia congenita, or hydrocele, use it. We believe it originated with Mr. Cruickshanks. The name of tunica albuginea is by the greater number of surgical writers given to that part which may be described as the peritoneal covering of the testicle. If we wish to distinguish the two portions of the tunica vaginalis from each other, we may call the portion in contact with the body of the testicle, the peritoneal covering of the testicle, and the other the peritoneal lining

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* This term is obviously derived from those authors who were examining dogs where it is a sheath around the testicle and cord.

of the scrotum, as we distinguish the peritoneum covering the intestines from the part lining the abdominal muscles.

Professor Langenbeck has not solved the grand problem—What is the cause of the descent of the testicle? He says there is a portion of peritoneum in the scrotum (which if we believe his plates, is sufficiently distinct), that pulls down the testicle. This question is still involved in much difficulty. Casparus de Pancera in his Dissertatio de Testis Humani ex Abdomine in Scrotum descensu, is of opinion, that the cellular membrane stretching from the scrotum into the abdominal canal, pulls down the testicle (he should have said pulls up) to the ring, and from thence it is pushed down into the scrotum by the action of the abdominal muscles. But to this, and to every other explanation already given, there are objections, and we believe we must still "refer it to a law such as that which controuls and directs the growth of parts."

We shall not dwell on the third section, Applicationes ad Hernias tam congenitas quam acquisitas, because we shall have to notice the same points in considering the book of Mr. Clocquet, but we must decidedly object to the representation of congenital hernia given in Plate X. The author is so anxious to shew the external layer of the peritoneum, that he has made out of the loose cellular membrane of the scrotum a much more distinct sac than that formed by the tunica vaginalis, which is the only sac in congenital hernia.

The work of M. Clocquet is a book of very considerable merit. The author has enjoyed great opportunities of making observations, he has dissected and made drawings from 340 cases of the different species of hernia. He has presented a numerous series of those preparations to the Museum of the Ecole de Médecine. At present he only offers a part of his observations, reserving to a future opportunity, the completion of this work.

The anatomical descriptions which M. Clocquet has given, are very good and very full, but we must object to his new names, for though they may be, perhaps, better than those used at present, still we are sure that students would be led into great confusion by them; for we find men very apt to suppose that new fasciæ are discovered, when only new names are given. It must have been remarked by every one who has been much in the society of students in London, that there is no subject which they are so anxious to understand as the anatomy of hernia. Those who have read much before they have dissected, begin in utter hopelessness of understanding

the subject; but if they be directed in their operations, they will in the second or third attempt make an accurate display, but still they are not satisfied; they will have it, that there must be something mysterious and unusually difficult in the fasciæ which have received such various names, and have required such extraordinary descriptions. They cannot imagine how surgeons can have puzzled themselves, and bewildered their readers, with that which they now think they find perfectly simple. We need not be surprised at this difficulty, since the descriptions which are given by some authors are quite at variance with true anatomy, while those views which are really correct, are given in so complicated and obscure a manner, that it is almost impossible for even a man who is conversant with the anatomy of the parts to follow them.

In the best authors there are omissions which have been in a great measure the cause of the students difficulty. A principal one is, in forgetting to mention the state of the body from which the views have been drawn. In a thin anasarcous body, all the fasciæ that have ever been described may be easily shewn; the fascia transversalis will be so distinct, that a student even in his first dissection, can make out the internal ring according to the description given by Mr. Cooper, while in a fat subject this will be a difficult task for even the experienced dissector.

Unless the student be told, how to place the limb, and how to use the knife, in the dissection of the parts concerned in femoral hernia, it is not possible for him to shew the various crescentic fasciæ. The young dissector naturally proceeds with a sharp knife, to clear away the fat, glands, and cellular membrane, while the limb is lying in a straight line; by doing this he cannot avoid cutting through all the connections of the fasciæ, so as to destroy all resemblance to those views which have been taken by merely detaching the loose cellular membrane and glands with the handle of the knife, while the legs were forcibly separated from each other. We shall endeavour to simplify this piece of anatomy, by giving an account of the manner in which the dissection is made in the Theatre of Great Windmill-street, and we shall add in the form of notes the names, which have been given to the several fasciæ by the various authors who have written on the subject.

It is of considerable importance in this dissection to have a good body. That of a strong muscular man is not so well adapted for the display of the anatomy of the groin as that of a person who has died of a lingering disease. The body of a male is the best for the dissection of the inguinal canal, and that of a female for the parts connected with femoral hernia. The body

is to be so placed that the abdominal muscles may be made tense: this is most conveniently done by placing a block of wood under the loins. To put the fasciæ of the thigh upon the stretch, one leg ought to hang over the side of the table. The dissection of the upper part of the external oblique is to be made according to the general rule of removing all the cellular membrane from the muscular fibre, but this plan must not be followed lower down than a line drawn from the one anterior superior spinous process to the other. At this part the cellular membrane under the skin becomes denser. The skin is to be separated from this fatty cellular membrane which is closely adherent to it, and is to be carried down to three fingers breadth below the line of Poupart's ligament.* By this method we leave upon the groin a quantity of condensed cellular membrane, which may be traced from that covering the pectoralis muscle and the upper part of the muscles of the abdomen. This cellular membrane has generally received the name of fascia superficialis communis, because it is of equal importance to the inguinal and femoral hernia. This fascia† is now to be dissected from the tendon of the external oblique. It has a very slight attachment to the expanded tendon, and the union between it and the spermatic cord is so slight that the handle of the knife can be pushed between them as far down as to the bottom of the scrotum. The attachment between the Iliac ‡ portion of Poupart's ligament and the fascia is very strong, but the connection between the Pubic portion of the ligament and the fascia is so slight that the handle of the knife is sufficient to destroy it. We can separate the fascia with great ease for about an inch lower down than the edge of this part of the ligament, but we cannot lift it farther without using the knife; for the fascia becomes intimately united to the inguinal glands, and to the fascia lata. Although we have raised this fascia, we find that the accurately defined pillars of the abdominal ring, which are generally represented in plates as the first

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* Tendon of the external oblique, Fallopian or Poupart's ligament, Crural Arch, Ligament of the Thigh, Femoral Ligament.

† Fascia superficialis of Mr. Cooper. Described by Camper and many others as only a membranous layer; by Scarpa as a prolongation of the Fascia Lata. In the scrotum of the fœtus it forms the external lamina of the peritoneum of Langenbeck.

‡ The terms *Iliac* and *Pubic* are better than *External* and *Internal.* The length of the Poupart ligament may be divided into three portions. Two of the thirds are called *Iliac*, the other *Pubic*, being that which is nearest to the pubis.

stage of the dissection, are not yet visible; but that farther dissection is required to shew them; for a fascia, which shall be presently described, covers the ring so that only a prominence is seen, which we shall find to be formed by the spermatic cord.

It is of great importance to make this simple dissection in the manner that has been pointed out, because the fascia superficialis is intimately connected with the pathology of femoral hernia. We have already formed a little hollow below the pubic portion of Poupart's ligament by merely raising the fascia superficialis with the handle of the knife. Along this hollow we see lymphatic vessels running. If we look up under Poupart's ligament we may see those vessels passing into the pelvis. They perforate a portion of membrane which has received the name of cribriform fascia, from the appearance which it presents when the lymphatics are cut short. Occasionally a small gland is projected through one of the holes. The general course of the femoral hernia is either to displace this gland, or to break through the meshes of the net-work. When the hernia has passed through the cribriform fascia, it is lodged in the external hollow which we have just described. The natural course of the hernia would be to descend upon the thigh, but it is prevented from passing down farther than about an inch, on account of the close connection which exists between the fascia superficialis and the glands of the groin; but now the hernia increasing in size, and prevented from passing down upon the thigh, turns up, breaks through the slight connection which there is between the pubic part of the ligament and the fascia superficialis, and takes the place of the inguinal hernia. This explains to us what is the principal cause of stricture in femoral hernia. It is the acute angle made in the gut; and from the knowlege of this, we deduce principles upon which we must attempt the reduction of femoral hernia when so situated. We must endeavour to bring the base of the sac to a straight line with the neck, and consequently in the operation of the taxis we must first push the tumour downwards.

It has occasionally happened that a femoral hernia has passed up while the surgeon was in the middle of the operation. We have heard the surgeon blamed for operating in such a case—it has been said that the gut going up, before the stricture was cut, proved that there was no necessity for the operation; but instead of joining in the censure, we think that it would be even advisable in some cases to cut through the fascia superficialis, so as to allow the sac to come to a straight line, rather than to persevere long in the use of the taxis. All who have seen many cases of femoral hernia must allow, that a cut through the skin

and fascia in an early stage of any case would not be so dangerous as a protracted attempt to reduce the gut by the taxis. We have further to consider, that if it be not possible to reduce the hernia after having cut through the fascia superficialis, that it never would have been reduced by the taxis. And in that case all the steps of the operation must be performed.

We now return to the anatomy of the inguinal hernia. If we pull the spermatic cord towards the scrotum, we shall see a thin fascia passing off from the tendon of the external oblique and attached to the cord. It has been called Fascia Propria. It is very strong in a case of old hernia; but even in the natural state of the parts it is so distinct that it obscures the margins of the ring. By cutting this thin fascia where it is connected with the cord, and by letting go the cord, the upper part of the pillars of the ring will be distinctly shewn; but to make the opening of the ring quite apparent we must remove the loose fat with the forceps and scissars from the lower part of the cord; we shall then have such a view as is given in plates as the first stage of the dissection.*

The tendon of the external oblique is now to be cut through in two directions; one in a line drawn from the superior anterior spinous process of the ilium to the linea alba, and the other in the linea alba, to the pubes. The tendon of the external oblique is to be carefully separated from the internal oblique, and is to be fastened by a hook to the fore part of the thigh. This will give us the view of a great part of the inguinal canal. The cord will be seen lying on the lower margin of the internal oblique, and so connected by cellular membrane to the edge of the muscle, that it is difficult for a student in his first dissection to tell what is muscle and what is cord. This is in a great measure owing to the cremaster muscle,† for it

* Inguinal ring. Ring of the external oblique, or external abdominal ring. The anatomy of the canal is most accurately described in the folio edition of Charles Bell's Dissections, published in 1799.

† M. Clocquet has dwelt at great length on the cremaster muscle. He says it is formed by some fibres of the obliquus internus, which are pulled down by the testicle and gubernaculum during the descent, and he describes those fibres as having two distinct attachments, one to the belly of the obliquus internus, and the other to the os pubis; so that each fibre forms a loop *(des anses)*, similar to extensible cords, which, when fixed at their two extremities, are drawn down in the middle.

M. Clocquet also informs us that the testicle occasionally passes through the substance of the internal oblique, and then the same appearance of fibres is found both before and behind the testicle; and that an inguinal hernia in a female fre-

certainly varies considerably in the manner in which it takes its origin. The dissection is to be continued by pulling the cord in a direction towards the scrotum, and taking off the cellular membrane from it and from the margin of the internal oblique. By doing so we see that the internal oblique is not attached to the whole extent of Poupart's ligament, but at two inches and a half from the pubes leaving the ligament it passes in the form of an arch to the tubercle,* and to the linea ileo-pectinea† of the os pubis, so as to assist in closing the space behind the external ring. At the termination of the connection of the internal oblique to Poupart's ligament the fibres which form the cremaster muscle come off; these fibres occasionally arise from Poupart's ligament, so that the cord appears to perforate the internal oblique; but in the greater number of cases it is sufficiently clear that the cord passes under the internal oblique, not through it. In this part of the dissection we may observe a nerve which runs through the internal oblique to pass on the cord—it is called spermaticus superficialis. The next stage of the dissection is to shew the situation of the transversalis in relation to the cord. It is very difficult to separate the margin of the internal oblique from the transversalis, because they are generally united to each other; but by cutting through the fibres of the internal oblique, at their connection to the superior anterior spinous process of the ilium, we shall find some cellular membrane, and a branch of the artery called circumflexa ilii, lying upon the transversalis muscle. These will mark the line in which we are to dissect between the internal oblique and the transversalis. After having separated the internal oblique from the transversalis, its connection with Poupart's ligament is to be cut as far down as the origin of the cremaster muscle, and the muscle is then to be turned towards the linea alba. The whole of the margin of the transversalis will then be seen, and we may remark that its relation to the cord is very nearly the same as that of the internal oblique; the tendons of the two muscles will be found so closely connected with each other that it is almost impossible to separate them. The muscular fibres of the transversalis are now to be very carefully cut from Poupart's ligament. The fibres are to be scraped, not cut from a layer of condensed cellular membrane,

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quently pushes down some of the fibres of the internal oblique before it, so as to form "*un muscle cremaster accidentel.*"

* Spine of the pubis—tuberculum spinosum—tuberosity of the pubis.

† Linea ileo-pectinea,—linea innominata continuous with the crista.

which is called the Fascia Transversalis.* We have followed the cord along the inguinal canal, have seen it pass through the external oblique, and under the margins of the internal oblique and transversalis, and we should now expect to see the internal ring, described by Mr. Cooper; but this ring must be made. When we pull the cord we see part of the cellular membrane which lies under the transversalis, passing down upon the cord in a conical form. If we cut this membrane from the cord, and push it up, and then let the cord go, there will be a distinct hole formed in the shape of a ring, which on its iliac side has a distinct margin, but on the pubic side there is only the cellular membrane surrounding the epigastric artery and veins. We may remark also, that the cord at this point has lost its rounded form—the vessels are not bound together as they are at the external ring, but the component parts separating from each other, give the cord a flattened form.

Let us now trace the course of a common hernia to the scrotum, and shew what coverings it may have, and what are the probable causes of stricture.

The muscles and the peritoneum may be cut through in the usual way of exposing the viscera, and the flap held out so that the inside of the peritoneum and the depression which is found at the point, where the cord passes into the canal may be seen. In the greater proportion of cases, it is at this point that hernia takes place. Having laid down the transversalis and internal oblique again in their natural situations, if we push the finger from within, downwards into the depression of the peritoneum, we shall exhibit in appearance the first stage of the descent of a hernia. The finger is as the sac would be, above the cord and on the iliac side of the epigastric artery; by pressing forward the finger (it will not be possible to push on the peritoneum) it will appear under the margins of the transversalis and internal oblique, and being still pushed, it will pass through the external ring. A hernia lying at this point would be called inguinal hernia, but if the same sac were pushed down into the scrotum, it would be called scrotal hernia. This is the common course of an

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* Fascia transversalis of Mr. Cooper.—Fascia longitudinalis, or reflexa, of Mr. Clocquet.—Condensed cellular membrane between the peritoneum and transversalis muscle of many authors. Mr. Clocquet, in describing this fascia, gives a good example of the desire of modern authors to trace one fascia from another.—"The fascia transversalis comes from the posterior edge of the tendon of the obliquus externus, and receives *un feuillet plus ou moins fort* of the aponeurosis which covers the iliac muscle."

inguinal hernia, but its relation to the cord occasionally varies.

We may now shew what coverings the sac would receive in its passage to the scrotum.

In the common inguinal hernia the peritoneum pushes before it, that cellular membrane which has been called part of the transversalis fascia, and which we shewed must be separated from the cord before the internal ring can be made; this, when condensed, forms the innermost covering of the sac. The hernia now passes under the transversalis and internal oblique; we recollect that the cremaster muscle runs from the internal oblique to the cord, so it follows that if the hernia lies above the cord, the sac must be between the cremaster and the cord; the fibres of the cremaster which lie above the sac will be separated from each other, and the cellular membrane which connects the scattered fibres, forms what is called the cremastic or spermatic fascia, which will consequently cover the sac. The hernia now passes through the external ring; in the early part of the dissection, there was a membrane shewn passing from the margins of the ring to the cord, so as to prevent us seeing the ring; this membrane, which is sometimes called fascia propria, must form one of the coverings. The hernia may now either lie in the groin, or pass into the scrotum, and in either case it is covered by the condensed cellular membrane, called fascia superficialis.

If a patient had worn a truss for some time, all these fasciæ would be distinctly seen, but what is of more importance to recollect, the peritoneum which forms the sac, and which in its natural state is very thin, will have become very much thickened, particularly at the neck of the sac; it is occasionally so much thickened that it may be separated into a dozen layers. But if it were necessary to perform an operation for a hernia, which had come down a few hours before, instead of finding distinct fasciæ, after having cut through the skin and fat, we should see the process of the peritoneum around the gut, and the sac would be quite transparent, and the several fasciæ, which have been described, would be so thin as to be hardly visible.

The anatomy of the fasciæ in congenital hernia is much the same; but the sac which is formed by the tunica vaginalis, is generally very thin at the lower part, but very strong at the neck.

Before describing what are the probable causes of stricture, there are some circumstances to be recollected. To produce strangulation, the gut must be compressed in the whole circle; strangulation cannot be produced by muscular fibres, which

stick over the gut, for they relax occasionally; as for example, when a patient faints. The hole through which the gut is pushed is passive—its diameter is never diminished, but the protruded gut swells and is increased in size.

The most common seat of stricture in inguinal hernia, is the external ring; for though we do not see the ring, until we have dissected the parts, still we can feel it even before the skin is removed, by pushing the finger up along the cord. If the sac has been opened, if the external ring has been cut, and the stricture still remains, what is the cause of stricture? It cannot be caused by the margins of the internal oblique or transversalis muscles, for they will relax. Since we have high authority for believing that the stricture, in such a case, is caused by the fascia transversalis, we cannot deny that it does occasionally happen, but we should be more inclined to say, that the stricture is not caused by the internal ring itself, but by the neck of the sac, which is situated at that part. Our reasons for supposing so, are the following:—In the dissection of the parts, in their natural or ruptured state, no internal ring is seen, until we push up the cellular membrane which surrounds the cord, and even then, if we try its strength, we find it very weak, and particularly on the inner part, while the neck of the sac is generally so strong, that we might as easily break a circle of whip cord as tear it. The external ring, and the neck of the sac, are the most common seats of stricture, but there are varieties, into the consideration of which it would be impossible to enter at present.

There is a species of inguinal hernia, which in proportion to our limited opportunities, has occurred to us more frequently, than it appears to have done to Mr. Cooper—we mean the internal-direct or ventro-inguinal hernia. It differs in several points from the common inguinal hernia; it comes out on the pubic side of the epigastric artery; it does not come along the inguinal canal, but passes directly through the external ring; it is not covered by the cremaster or any part of the fascia transversalis, but only by the fascia propria and superficialis. The peritoneum is as liable to be thickened in this species as in the other. We have seen in operation the sac half an inch in thickness.

The dissection of the parts connected with femoral hernia may now be made. We have already described the first steps of the dissection. It is absolutely necessary that the limbs be forcibly separated from each other, and that the handle of the knife only should be used in removing the glands, as we are very apt to destroy some of the connections of the

fascia, if we use a sharp knife while the limbs are lying straight. When the glands are removed, we may see the manner in which the fascia lata is connected to the Poupart ligament, how it dips down towards the femoral vessels, and how it mounts up again to cover the pectinalis muscle. The part of the fascia lata which dips down towards the femoral vessels will have a crescentic form, but this will not be so distinct as is represented in many plates, particularly in those of Mr. Hey, unless we cut through the connection, which there is between the fascia lata and the sheath of the vessels; but by doing so we would destroy the natural view. It is this part which generally receives the name of superficial crescentic arch*; and under it the femoral hernia protrudes. It is in this stage of the dissection that we can understand how some surgeons have described the femoral hernia as situated under the fascia lata, while others have described it as lying above the same fascia; in truth, the femoral hernia is above one portion of the fascia lata and below another; it is under the part which is called crescentic arch and above the portion which covers the pectineal muscle.

If we pull away the lymphatics which are passing from the inguinal glands to those of the pelvis, we shall see a number of holes in a membrane which connects the lower edge of the Poupart ligament to the pectineal portion of the fascia lata. This part we have already noticed. This connection will not appear as a distinct fascia in our dissection; but it has received the name of fascia cribriformis from Mr. Cooper; and, as an addition to our stock of names, we have from M. Clocquet, septum crurale. It must be very carefully examined, for it is the only weak part of the boundary between the pelvis and the thigh; for on the iliac side of this fascia cribriformis, Poupart's ligament is firmly attached to the fascia lata, and on its pubic side there is a firm union between the ledge of the third insertion of the Poupart ligament and the portion of fascia lata covering the pectinealis muscle.

We now proceed to the examination of the internal view. The flap of the abdominal muscles is to be held up, and the peritoneum is to be carefully torn from it; by doing so a very useful view is given, without using the knife at all. At about an inch from the pubes, we see a depression filled up by the cribriform fascia, through which the lymphatics pass from the

* Femoral ligament of Mr. Hey—falciform process of the fascia lata of Mr. Allan Burns, all these parts are accurately described in the folio edition of Mr. Charles Bell's Dissections, published in 1799. He did not give them names.

thigh into the pelvis. All of Poupart's ligament on the iliac side of this depression is very firmly connected to the fascia which covers the iliacus internus muscle; and on the pubic side of the depression we see the united tendons of the internal oblique and transversalis inserted into the linea ileo-pectinea, and upon their internal surface, a thin fascia which may be traced from the fascia transversalis. If we put our finger into the depression, and break through the holes of the cribriform fascia, we may pass it down into that hollow on the fore part of the thigh, which we have already described as the situation of femoral hernia. But we must recollect that the firm connection between the fascia superficialis and the glands of the groin would prevent the femoral hernia from passing down farther than a very short distance. If we turn up the finger in the same manner in which a hernia would be turned, we shall find it press against the portion of the fascia lata which has been called superficial crescentic arch; but we can also feel a resistance to our finger situated deeper than this arch. This will be found to be the part which has been called deep crescentic arch.

To shew this as a distinct fascia there is a great deal of dissection required, and it may very justly be criticized as one of the tricks of the dissector; but as it is a point of anatomy which is often talked of, we shall describe what appears to us to be the easiest mode of displaying it. It may be seen on the same limb in which the anatomy of inguinal hernia has been shewn, but it would be better to have another, and then we may proceed thus:—After having made the dissection of the superficial crescentic arch, dissect the tendon of the external from the internal oblique, so as to leave the internal attached to the point of union between the iliac fascia and Poupart's ligament. By doing so, the ligament will be divided into two parts, one of which appears to be formed by the union of the tendon of the external oblique and the fascia lata. If we cut through the attachment of the ligament to the superior anterior spinous process of the ilium, and through the fascia lata as far down as the crescentic arch (to save the parts below, it is useful to pass the handle of the knife under the fascia as a directory to cut upon); we can then hold up the tendon of the external oblique, Poupart's ligament and the fascia lata, so as to have a satisfactory view of the connection between these several parts. Having laid these parts over upon the pubes, we have still a view very similar to that we have just described. We see the deep crescentic fascia taking nearly the same course as the superficial arch. It is intimately connected with that portion

of Poupart's ligament which we have left, and which may be described as formed on the iliac side of the vessels by a connection between the fascia iliaca and the obliquus internus and transversalis, and on their pubic side by the insertions of the tendons of the two muscles into the linea ileo-pectinea, covered by a part of the fascia transversalis. To understand the derivation of the names given to the parts forming this deep crescentic arch, we must again look into the pelvis. The femoral artery and vein surrounded by their sheath, may be separated from the fascia iliaca which passes down upon the thigh behind the vessels; at the exit from the pelvis, the attachment of the fascia to the sheath is so slight that we may pass down the handle of a knife between them; the connection between the anterior part of the sheath and the fascia which covers it, is a little firmer, but still we can push down the knife nearly as far as on the posterior part; by using a little more force, the knife will pass out, under the part described as the deep crescentic arch, and this will be found to be the point, at which a hernia protrudes. The fascia posterior to the vessels, has been called fascia iliaca, while that on the anterior part, has been described as a continuation of the fascia transversalis. They become so incorporated with each other and with the sheath of the vessels that they cannot be traced down the thigh, as distinct fasciæ, farther than two inches below Poupart's ligament.

The space which we have just described as bounded by the fascia iliaca and fascia transversalis, has received various names; by many surgeons it has been called the crural sheath,* by others the sheath of the vessels; and, consequently, when they describe femoral hernia, they say that it passes along the sheath of the vessels; but this language is very incorrect, and leads to great confusion, for the proper sheath of the vessels is formed by cellular membrane which surrounds them through their whole course from the sacrum to the point where the profunda is given off.

M. Cloquet gives the description of this part, in the true spirit of a modern discoverer of fasciæ and rings. He says, that we have here a part analogous to the inguinal canal, that this (the crural canal) "has a superior and inferior opening. The inferior is the opening by which the saphæna passes through

* There is no crural ring in the natural state of the parts, but it may be *felt* during an operation; and a distinct ring may be shewn in a preparation, by removing the whole of the herniary sac. Such an appearance is very well shewn in Mr. Cooper's plates.

the fascia lata to enter the femoral vein." Although this lower opening is represented in all the plates of the anatomy of the groin, given by our own authors, yet we have not described it, because we think, that it is not of importance in considering femoral hernia, not only on account of its situation, but also of the connection which there is between the fascia superficialis and the lymphatic glands, which we have already shewn, prevents a femoral hernia from passing so low down. There are no cases given by English authors, of herniæ protruding through this hole, but M. Cloquet asserts, that he and M. Beclard have seen many examples of it.

We shall now describe the layers of fasciæ which may be found in a case of femoral hernia, and what are the most probable causes of strangulation.

The sac of a femoral hernia passes into the depression which in the natural state of parts is closed by the cribriform fascia. We have seen that there are a number of holes in this fascia. One of these holes may be enlarged, several may be thrown into one, or what is more common, a small gland, which is partly within, and partly without the pelvis, may be pushed forward by the hernia. The hernia is then lodged in the hollow below the superior crescentic arch; it may continue there, but it more commonly becomes enlarged, and turns up upon Poupart's ligament. The cause of this, we have already shewn. In its passage from the abdomen, it has the epigastric artery on its iliac side, and if the obturator be given off by the epigastric, the probability is, that in its course towards the thyroid hole, it will pass over the neck of the sac. The spermatic cord is so far removed, that we have no dread of it in operation, except in the superficial dissection.

We shall now suppose that we are operating for femoral hernia; the skin is cut through, and probably some branches of the pudicæ externæ are cut; we come then upon the fascia superficialis communis, but we shall be very much mistaken, if we expect to see this in any way resemble a distinct fascia. At every scratch of the knife, branches of the inguinales going to the glands will bleed, and from the intimate manner in which the glands are united with the fascia, it will appear more like a solid mass covering the sac than a fascia. If it be only a recent hernia, no other fascia will be seen; but if it has existed for some time, the cellular membrane which has been pushed down before the sac, will be condensed into a fascia, or rather a bag. This has been called by Mr. Cooper, fascia propria—a term which is very properly objected to, for no such fascia is seen in the dissection of the natural parts; it never has the

appearance which we generally suppose a fascia to have, for it not only covers the sac, but contains it as in a bag. During an operation, it has so much the appearance of a sac, that we have cases given as examples, of one portion of peritoneum within the other; for the surgeon has supposed that the true sac, which he finds on opening this bag, was a second sac. It is called by Scarpa, the proper cellular envelope of the herniary sac, and by Mr. Charles Bell, the outer or false sac.

By opening the sac, it will now be possible to bring the hernia into a straight line, and by thus doing away the acute angle, perhaps the stricture may be relieved; but it will almost always be necessary to make use of the bistoury. If we were now to consider the question of the seat of stricture, as a mere dissector would, we should make it appear very complicated; but by taking it practically, and as it is found during operation, it will be made sufficiently simple.

In the course of our dissection we described two crescentic arches, but in a case of hernia they will be so pressed together as to appear only one. Whatever names we choose to give to these fasciæ, is of little consequence in practice, but the recollection that the part which causes the strangulation, is of a semicircular form is of great importance in settling the question,—how is the stricture to be cut?

Some authors direct us to cut inwards, some outwards, and others upwards. It is seldom necessary to cut more than a very small part of the fasciæ which we have just mentioned, but if it is required to cut more, is it not better to follow the advice which is given in Mr. Charles Bell's Surgical Observations, and cut a little at different points, for this will be as effectual in relaxing a circle as one long cut in any one direction, and will not be attended with the same danger?

We have been led into great confusion by the use of the term Gimbernat's ligament. It appears to us that the greater number of surgeons who make use of this term, have never read the paper of Gimbernat, but have taken their authority from Mr. Hey. Mr. Hey describes Gimbernat's ligament to be the "posterior attachment of the aponeurosis of the external oblique muscle." The common expression in London is that Gimbernat's ligament is the third insertion of Poupart's ligament. Now we have already shewn, that after the whole of the tendon of the external oblique has been cut through, and consequently what is generally described as the third attachment of Paupart's ligament, there still remains that deep crescentic fascia which we have, perhaps, erroneously described as the continuation of the

fascia transversalis, but which is sufficiently strong to produce strangulation.

It would be much better if we were to lay aside the use of Gimbernat's name,* for he has no right from the merits of his publication to be considered as an authority. Though some parts of his anatomy are very good, still we cannot have much respect for the anatomical acquirements of a man who says,—"Were it not an expansion of the *fascia lata* which unites firmly with the bands of the external abdominal ring, and strengthens their junction, they would separate on the application of the slightest force as far as the spine of the ilium;" and in discussing an operation for femoral hernia by Baudou in the Hotel Dieu, he says, "The *spermatic* artery when divided *within the abdomen* occasions a hæmorrhage very difficult to stop."

The operation of Gimbernat appears to have been suggested by speculations upon the view of the parts in their natural state, and not from any observation of the difficulties, which embarrass the surgeon in his operation. Surely there cannot be any thing worthy of admiration, in his manner of operating, for he most awkwardly with both his hands introduces his directory and bistory on the side of the sac next the pubes, and runs them inwards, so as to cut up the attachment of the Poupart ligament to the os pubis. He does not describe the danger which the obturator artery would be in, from this cut, but he warns us to take care that we do not wound the uterus or bladder; by this last advice he clearly shews to what a depth he passes his knife.

We appear to have neglected the book of M. Cloquet, that we might give place to our own description of these parts; but to have examined, and described all the discoveries of fascia which M. Cloquet has made, would have led us into discussions, which have been already too much attended to in this country, to the neglect of other points, which are much more important in the surgery of hernia.

We may say in conclusion, that although the study of the anatomy of the groin must always be considered as a principal point in the surgical education of a student, still after he has made himself master, not only of the simple anatomy, but also of the confused descriptions, which have been given at various times, he has much to learn to make him

* As a proof of the great desire of the French surgeons of the present day to imitate their brethren in England, we find that they attach much importance to the authority of this author. M. Breschet is translating the Paper of Gimbernat.

competent to undertake an operation for femoral hernia. Those who have seen many operations for femoral hernia, must allow, that they hardly ever saw the appearances exactly similar in two cases. The knowledge of those facts is, assuredly, only to be attained by watching the operations of a skilful surgeon; and by examining the diseased parts. We confess that it is very difficult for a student to get such opportunities, but we do think, that it is in his power, while prosecuting his studies in London, to derive much more benefit, from examining the preparations of hernia which are to be found in Anatomical Museums, and from paying attention to the history of the cases, than in endeavouring to follow all the various descriptions which have been given of the *fasciæ.*

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ART. II. *Essai sur l'Anatomie et la Physiologie des Dents, ou Nouvelle Théorie de la Dentition. Par A. Serres.* 8vo. Paris, 1817.

THERE are few subjects upon which the physiologists of our own country have been more disposed to take for granted preconceived theories than the structure of the teeth, and the phenomena which they exhibit in their formation and changes. Our Continental neighbours on the other hand, who are never backward in the introduction of *ingenious,* though occasionally *useless* novelties, have preserved that trait of their character on this subject also, by a determined rejection of almost every theory which did not spring from the fertility of their own invention; or at least by such a modification of the opinions of others, as might best serve to conceal that assent, to which they were reluctantly forced by the mere power of truth.

From both these grounds of censure, however, some exceptions are to be made in favour of men who have united the advantages of these opposite dispositions;—who, on the one hand, have laboured patiently at the investigation of facts, not for the purpose of torturing them to support a preconceived hypothesis, but of raising a legitimate theory upon their basis; and who, on the other, have not been wanting in that clearness and originality of conception which are indispensible in forming such an arrangement of facts, and such a lucid display of all their bearings, as shall lead to a correct and evident deduction.

The work of M. Serres, though not by any means free from

those cardinal faults which we have mentioned as belonging generally to the physiologists of his country, has rendered no inconsiderable addition to our knowledge upon this subject. And although we are too frequently called upon to take his assertions for granted without sufficient proof, and to assent without examination to his gratuitous assumptions, we are not unfrequently rewarded by the statement of a novel and striking truth, or a suggestion which might lead to the explanation of some doubtful or controverted point.

The preface contains a fair statement of the reasons which led him to the investigation, the opportunities which he has enjoyed for prosecuting it, and an enumeration of his principal discoveries.

"Placé depuis plusieurs années à la tête des travaux anatomiques des hôpitaux, j'ai profité de l'occasion qui m'étoit offerte, pour faire de nouvelles recherches sur quelques points encore douteux de l'Anatomie et de la Physiologie. De ce nombre me paroissent être l'anatomie et la physiologie des dents, et la théorie de la dentition, qui en découle : j'ai en occasion de m'en convaincre, à mesure que j'ai avancé dans ce travail, que la multiplicité de mes occupations m'empêchera de rendre aussi complet que je l'eusse désiré ; néanmoins, on y trouvera des faits nouveaux, ou peu connus : 1°. sur l'existence et la position des germes de la première et dela seconde dentition dans les mâchoires du fœtus ; 2°. sur les deaux lames qui compnsent l'envelloppe membraneuse des dents ; 3°. sur une artère particulière, destinée aux premières dents, qui disparoît avec elles, et que j'ai désignée sous le nom *d' artèrie de la premiere dentition ;* 4°. sur la distribution des nerfs dentaries ; 5°. enfin, sur les glandes dentaires, qui, à raison de leur ténuité, avoient échappé jusqu'à ce jour aux recherches des anatomistes ; glandes destinées à sécréter la matière connue sous le nom de *tartre des dents.*

"Dans la partie physiologique, je me suis un peu étendu sur le développement de ces petits corps, parce que les auteurs n'en ont presque rien dit ; j'ai assigné un nouvel ordre dans l'eruption des premières dents, celui adopté par tous les anatomistes n'étant point conforme à l'observation ; j'ai indiqué le véritable mécanisme de leur chute, qui précède la seconde dentition ; j'ai exposé avec détail un nouveau conduit, qui, du sac où se forme la dent, se rend aux bords alvèolaires, conduit que j'ai nommé *gubernaculum dentis,* parce qu'il explique l'evolution des dents, et l'ordre régulier qui l'accompagne ; enfin, j'ai montré la succession des dents permanentes dans le remplacement des premières dents.

"Ecrivant la théorie de la dentition, j'ai dû m'arrêter sur la formation des troisèmes dents, et sur la dentition des vieillards, quoique quelques anatomistes célèbres l'aient révoquée en doute. Ce phénomène est assez fréquent pour fixer l'attention des physiologistes, d'autant plus que les accidens qui l'accompagnent quelquefois pourroient occasionner des méprises fâcheuses sur leur véritable source.

"Enfin, dans l'exposition de l'irrégularité de la dentition, je me suis appliqué à dévelooper les lois invariables que suit la nature, même dans ses écarts, soit lorsque l'emplacement où elles doivent s'aligner est rendu trop étroit par le peu de développement des arcs maxillaires, soit lorsque les premières dents ne tombent point et que les secondes sont obligées de se placer en arrière; on verra que, d'après la disposition du *gubernaculum dentis*, on peut déterminer *à priori* le lieu qu'occuperont ces nouvelles dents, et les déviations qu'elles feront subir aux autres: d'où découlent, comme conséquence, toutes les espèces d'irrégularité de la dentition, et les moyens les plus simples pour y remedier." p 1 et seg.

In the first part, "De l'existence des germes de la premiere et de la seconde dentition dans les machoires du fœtus," the germs of many of the teeth are described as having been seen by M. Serres, much earlier than any other author has mentioned.

"Sur les mâchoires d'un embryon de deux mois, j'ai rencontré les germes de la première dentition des incisives et des petites molaires, je n'ai pu trouver les canines; à deux mois et demi, j'ai trouvé les canines; à trois mois, j'ai constaté la présence non-seulement des germes de la premiere, mais même ceux de la seconde dentition, jusqu' à la dent dite de *sagesse*."—p. 3.

We have ourselves clearly traced the minute germs of the permanent central incisores at three months, but are free to confess that we have been unable at that early period to discover any others of the second dentition, except the first molaris. It is remarkable that Hunter and Blake have given diametrically opposite opinions respecting the vascularity of the two layers of the enveloping membrane of the germs—one asserting that the external is vacular and the inner totally devoid of vessels, the other that the internal is highly vascular, and the external not so. Mr. Fox first injected both layers, and we have seen preparations in which that author's assertion has been fully verified. Serres considers the internal membrane as a structure *sui generis*, partaking of the nature of a serous and a mucous membrane; differing in this respect from Bichat, who looked upon it as simply belonging to the former class.

The remainder of the anatomical division of the work does not contain any new fact of importance; we hasten, therefore, to take a more extended view of the second part, viz. the physiology of the teeth.

On the long disputed subject of the structure of the teeth, whether on the one hand possessing a true animal organization, or on the other totally devoid of vascularity and of living power,

we have already given our opinion at some length.* It would not, however, be doing M. Serres justice, to pass over this part of his work, as he has given us in a systematic form his objections to the theory that they are similarly organized with the bones. We shall, therefore, consider briefly upon what grounds his objections rests.

These objections then are contained in the following passage:

"Tout me porte à croire que le tissu propre des dents n'est pas le même que le tissu propre du système osseux. Le parallèle de leurs propriétés pourra éclaircir cette opinion.

"1°. Les os sont précédés, dans leur développement, par un état cartilagineux; les dents transsudent de la surface de la pulpe, et n'ont point d'état intermédiaire. 2°. Les os sont enveloppés d'un périoste qui leur forme une espèce de gaîne, les dents n'en ont point; la couche émaillée semble le remplacer en dehors. 3°. Les maladies qui affectent le système osseux en général, telles que le rachitis, qui le ramollissent et le détruisent, n'agissent point sur la dent; ce tissu reste intact au milieu de la dissolution générale du système osseux. 4. Si on plonge le tissu propre de la dent et une partie du système osseux dans l'acide nitrique concentré, et qu'on ne l'y laisse que quelques heures, le premier n'est point attaqué et le second est détruit. 5°. Par la calcination, l'os donne un résidu blanc, dont le phosphate calcaire paroît être la base; la dent se transforme en un résidu bleuâtre à un plus haut degré de chaleur, et sa base paroît contenir plus de carbonate de chaux. 6°. L'os se détruit dans la terre beaucoup plus promptement que les dents; dans les conceptions extra-utérines, les os sont dissous, et les dents restent intactes. 7°. L'os est pénétré par une multitude de vaisseauz, les dents n'en ont point. 8°. Enfin, les maladies des os et des dents n'offrent pas la plus légère analogie."—p. 45, et seq.

Now all that is proved by these facts, is, that the teeth possess a structure much more dense than the bones, and that their chemical composition is in some measure different; for instance, in the former having a rather larger proportion of carbonate of lime than the latter, which, however, is so trifling, as not to be at all noticed by Fourcroy or Vauquelin. But as this is a more systematic attempt to support the theory than has been usually resorted to, one or two of the more plausible arguments deserve individual notice:—"Les os" says our author, "sont précédés dans leur développement, par un état cartilagineux; les dents transsudent de la surface de la pulpe et n'ont point d'état inter-

* Vide Review of "Blainville's Comparative Anatomy of the Teeth."—Journal, No. I. page 53.

médiaire." Now, what is meant by *transuding* from the surface of the pulp? Surely this physiologist must have observed the beautiful delicate membrane which belongs exclusively to the pulp, and from which the bony substance is in reality secreted, and which Dr. Blake has ingeniously supposed to be a continuation of the periosteum of the alveolus, which gives a covering to the vessels, &c. at their entrance, and is then expanded over the surface of the pulp. It is believed, that in those cases where a deposit of osseous matter takes place upon the surface of a bone, and perhaps also in necrosis, where a case of bone is formed for the purpose of supporting a limb during exfoliation, the vessels of the periosteum perform that function. If this be true, and Dr. Blake's idea also correct, this fact, instead of affording an argument *against* the analogy of these structures, must be considered as an additional presumptive evidence of their identity.

7° " L'os est pénétré par une multitude de vaisseaux, les dents n'en ont point." We think that this is taking for granted more than the facts will support. What, we would ask, is the medium of that firm connection between the membrane lining the cavity and the internal surface? Or between the periosteum and the fang? In short, what can be the use of these membranes, except to supply the tooth with vessels and nerves?

" 8°. Enfin, les maladies des os et des dents n'offrent pas la plus légère analogie." We are again obliged to differ *in toto* from this assertion of Mons. Serres. Let us take caries for example, and we shall find that the disease differs in the two structures, only so far as may be accounted for by the different degrees of vitality and of organization which they possess. When a portion of bone has its vitality destroyed, an increased action is set up in the line of living bone which immediately surrounds it; in consequence of which that portion of living bone is removed by absorption, and the dead portion thus becomes liberated. When, from inflammation or any other cause, a part of a tooth loses its vitality, an increased action is, we believe, set up also in the contiguous part, but instead of becoming absorbed, that portion also loses its life, from the deficiency of its organization; this becomes also an extraneous body, the same circumstance again occurs in the surrounding part, and so on until the whole tooth is destroyed. Our limits will not allow us to enter more fully into this question at present.

In the developement of the teeth, and their appearance through the gum, we have not much that is new or particularly important; though, throughout, the manner of treating this

subject is ingenious and pleasing. The author evidently leans to the opinion that there is no *vascular* connection between the pulp and the bony shell which is formed upon its surface. We acknowledge this connection to be extremely slight, but we are somewhat surprized that so accurate an observer should not have discovered its existence at the extreme edge of the bone, where it is sufficiently obvious in every instance.

In the section which treats on the *third dentition*, several well authenticated instances of that fact are adduced. We shall give the author's opinions on the origin of this remarkable phenomenon in his own words.

"Cette dentition peut donner lieu à la question physiologique suivante: Y a-t-il dans les mâchoires plusieurs germes, ou bien les gencives contiennent-elles, dans quelques circonstances données, des organes capables de former et de produire de nouvelles dents?

"La première de ces deux opinions me paroît plus vraisemblable; il me paroît plus simple d'admettre que certains individus peuvent naître avec des germes surnuméraires, comme on en voit qui naissent avec des doigts, des testicules, des reins ou des ovaires surnuméraires, que de supposer aux dents la faculté de se reproduire, quel que soit, d'ailleurs, le mode de reproduction qu'on adopte."—p. 131.

"J'ai ouvert un nombres prodigieux de mâchoires pour chercher à rencontrer ces troisièmes germes, et je dois avouer n'en avoir trouvé qu'un seul sur un mâchoire inférieure d'un homme de trente à quarante ans environ. Il étoit situé entre les deux petites molaires et au-dessous, la couronne étoit entièrement ossifiee, les racines commençoient à se former, il étoit du volume de la première grosse molaire, avoit cinq tubercules distincts et deux racines. Quoique ce fait soit très-propre à confirmer mon opinion sur la troisième dentition, je dois néanmoins offrir les doutes qu'il présente. Ne seroit-ce point une dent molaire de première dentition, qui ne seroit point sortie au terme ordinaire? Mais une observation publiée dernièrement par M. *Lemaire*,(1) me paroît ne laisser aucun doute à ce sujet. Il s'agit de l'extraction d'une canine, à laquelle adhéroient plusieurs autres: 'Ma surprise fut 'extrême dit l'auteur, lorsqu'au lieu d'une dent canine, j'en trouvai 'quatre tres-distinctes, détachées les unes des autres, et sans doute 'produites par quatre germes différens.' Cette observation sert à éclaircir celles que nous avons déjà rapportées. N'est-ce pas à des germes semblables que devoient leur naissance, les trois canines dont parle *Gehler*? N'est-ce pas à de semblables germes que doit être attribuée la dentition chez les vieillards?"—p. 132, 133.

The next passage contains a concise statement of Mons.

(1) Bulletin de la Société médicale d'émulation, No. VII. Juillet 1916.

Blainville's theory of the formation of the teeth, and a reasonable objection to it founded on the occurrence of a third dentition.

" M. *de Blainville* conçoit d'une autre manière la pousse des troisièmes dents (1). Selon cet anatomiste, les dents suivent, dans leur développement, les mêmes lois que les poils; elles sont sécretées par la pulpe dentaire, et susceptibles d'être reproduites, toutes les fois que, dans leur extraction ou dans leur chute naturelle, cette partie n'est point altérée (ce qui doit être bien difficile). Ceite manière de concevoir le phénomène n'expliqueroit pas la formation des dents surnuméraires, lors d'une double rangée de dents: ces troisièmes dents n'ont pu être formées que par de troisièmes germes."—p. 133, 134.

We cannot take leave of this ingenious, though somewhat fanciful production, without adding one more of the author's *discoveries*, as an additional instance of his readiness to seize upon a pretty theory, and to make assertions almost entirely unsupported by facts, for the purpose of establishing it.

This instance occurs in the explanation of Fig. 5, of the fourth plate, in which he gives a very distinct and regular view of a set of little glands, which, he says, secrete the tartar, which is so apt to accumulate about the necks of the teeth.

" Avant la sortie des dents, les rebords cartilagineux des mâchoires de l'enfant les remplacent, ils saisissent et fixent de cette maniere les objets sur lesquelles ils ont besoin d'agir, spécialement sur le mamelon de la mère; une multitude de petites glands globuleuses blanchâtres, superposées les unes au-dessus des autres, sont logées dans l'épaisseur du cartilage gengivale. Plus tard, ces glands sécrétent une matière grasse jaune, connue sous le nom de tartre des dents, susceptible d'éprouver, par les maladies, de grandes variations; ce tartre n'est donc pas un produit de la salive."—p. 178.

The acknowledgment, however, which is contained in the following *candid* note on this passage, renders it the less necessary for us to animadvert upon its improbability.

" Je dois prévenir que la figure représente ces glandes d'une mamaniere un peu idéale. Il est impossible de pouvoir les préparer sur un plan aussi régulier; mais en coupant chez un fœtus à terme le cartilage des gencives, couche par couche, on les aperçoit très-aisément. Au reste, je n'ai voulu par cette figure qu'indiquer leur position aux anatomistes, et appeler leur attention sur un fait curieux."

(1) M. *de Blainville* a déjà émis cette idée dans le Bulletin de la Société philomatique, année 1815.

We need only ask how it is possible, except by supposing that the tartar is deposited from the saliva, to account for the invariable fact, that the principal accumulations of that substance are found on those teeth which are immediately opposite to the openings of the salivary ducts—that is, upon the external surface of the upper molares, and the internal of the inferior incisores.

The work certainly contains a number of most important hints, which, however, we must consider, at present, as principally calculated to afford a sort of text book for subsequent examination; for, although there is much that is new and highly ingenious in the theories of Mons. Serres, we think they should receive the sanction of unbiassed and deliberate reconsideration and repeated experiment before they can be looked upon as *confirmed truths.*

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Art. III. *Sketches of the Medical School of Gottingen. To which are prefixed some General Observations on the Universities of Germany.*

The remarkable difference which exists between the Protestant and Catholic Universities of Germany, has induced us to defer to the present opportunity, some general observations which we had intended to prefix to that series of articles, in which we purposed to draw a faithful picture of the principal schools and universities of Germany. Viewed as literary institutions, the protestant universities, which chiefly occupy the north of Germany, are undoubtedly superior to the catholic schools, and in the words of Madame de Stael, "toute la gloire litéraire de l'Allemagne tient à ces institutions."*

It is well observed, by an amusing modern writer,† that nothing can be imagined more striking than the contrast between an English and a German university. "In the former, the Gothic buildings, the magnificent colleges, the noble libraries, the chapels, the retired walks, the scholastic grace of the costume are all so many interesting indications of the antiquity,

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* De l'Allemagne par Mde. de Stael, Tom. I. p. 156. And for the effect of the Reformation on the Universities, see M. de Villiers's Coup d'Œil sur les Universités de l'Allemagne.

† An Autumn near the Rhine, or Sketches of Courts, Society, Scenery, &c. in some of the German States bordering on the Rhine, 8vo. 1818.

the munificence, and the dignity of the institution. But the constitution of a German university has necessarily no monument of architecture, no appendage of dignity, scarcely any decent building belonging to it. The Universität-Gebaüde, or public buildings containing the library and the lecture rooms of the professors barely come under this last description. Indeed, in most universities, the lectures are delivered at the professors' houses; the university being, in fact, only a place where there is a good library and lectures delivered to those who are willing to attend them."

There were, at one time, between thirty and forty universities in Germany. The events of the last twenty years have considerably diminished that number. Without enumerating them all, it will be sufficient for us to state that the most celebrated of them are Gottingen, Halle, Berlin, Jena, Leipsic and Heidelberg.

They are divided into four faculties—Divinity, Jurisprudence, Medicine, and Philosophy. Each department has several Professors. The prince of the country in which the university is situated, is nominally the rector, while a pro-rector chosen annually from among the professors, exercises all the powers and privileges of head of the university. The professors are appointed by the crown, and receive a small annual salary. Their principal emolument is, however, derived from the students who attend their lectures, and from their literary labours. Perhaps, no class of men concentrates within itself, so much talent, industry, and devotion to science, as the German professors. The welfare and prosperity of an university are generally of so much consequence to the state in which it is situated, and that prosperity depends so entirely on the popularity of its professors, that they are always selected from among those who have by their talents and industry rendered themselves conspicuous in their respective branches of study.

The habits of a German Professor offer few attractions to the man of the world. The extent and variety of knowledge which is required, in a country where knowledge forms the greatest and most enviable distinction, is only to be acquired by indefatigable zeal, by devoting every moment not employed in teaching to vigorous study, and by an almost total separation from the pseudo-pleasures of fashionable life. It has of late years been usual in England to ridicule the ponderous learning of the Germans. It would be better to imitate their industry. The circulation of knowledge in Germany is truly astonishing. Every man who makes the least pretension to learning publishes the result of his observations. From the

cheapness of books, and the avidity with which they are bought, new opinions are speedily made known, and are quickly confirmed or rejected. The number of living authors is estimated at 14,000: in the year 1800 the number of periodicals works was 340. This number has considerably augmented, and at the annual fair of Leipsic it is estimated that the 200 booksellers who frequent it, sell books to the value of upwards two millions of dollars. All statistical observations of this kind are liable to error; but they serve to illustrate the subject. It has been calculated by a modern writer that thirty-six millions of Europeans depend entirely on Germany for their literary resourses, and that six millions more draw the principal part of their literary enjoyment from the same country.

The constitution of the German universities would at first sight appear very favourable to the students. By decrees, even more ancient than the Reformation, these constitute a free body in the state, and except in criminal cases of great magnitude, the ordinary police of the country has no power either of punishment or controul. They are in fact only subject, if subject it can be called, to the University Police, consisting of one or two old men acting under the orders of the Pro-Rector. "C'est une belle idée de nos pères que d'avoir rendu les établissmens d'Education tout-à-fait libres; l'âge mûr peut se soumettre aux circonstances: mais a l'entrée de la vie, au moins, le jeune homme doit puiser ses idées dans une source non alterée."* There is no gradation of rank or birth, distinctions of country are *professedly* abandoned, and poor and rich are on the same foundation, merit being the sole distinction. So far all is well; but the evils which spring out of this system counteract many of the advantages. In Germany every one goes to the University. To practice medicine a regular university education is indispensable, while those destined for the army or the law must qualify themselves by two years residence at some university. They generally therefore enter young, and at 16 or 17 are transferred from the controul and discipline of the parental house to a state of the most unbounded licence. The prevailing mania is the military spirit, and duels without number are the consequence. Our readers will smile when we tell them that during six months there occurred between three and four hundred duels at one university of 1200 students; of these, only two proved fatal, being fought with the sword, and the person of the combatants well protected. We agree with the ingenious

* Madame de Stael.

author whom we have already quoted,* that these duels have all the ill effects of brutalizing the feelings without the questionable advantage of exercising the courage. The practice of duelling, though forbidden, cannot be wholly suppressed, and the Government cannot help remembering that from the universities arose that spirit which roused the Germans from their apathy, and urged them to effect the deliverance of their country. When we were in Germany, we lived much among the students, and from what we saw we did not hesitate to declare our opinion, that this spirit, dignified with the name of liberty, but really licentiousness, would sooner or later prove destructive to the institutions which had engendered it; founding our opinion upon the fact that a judicious restraint in youth is the most effectual foundation for a love of liberty in manhood. The late melancholy events at Gottingen have but too well justified our fears.

No peculiarity of dress is enjoined by the university; but a student is known all over Germany by his loose frock, hair flowing down his shoulders, and cap bearing the colour and emblem of the country of which he is a native. The students have a peculiar and secret association, known by the name of *Landmanschaften;* that is to say, the natives of each country unite themselves into a society, and bind themselves to observe all the laws and enactments which may emanate from it. The particular objects which these societies have in view are the preservation of the students' rights and privileges, the protection of their weaker countrymen, and the regulation of duels, one of the most important considerations of a German student. These societies are prohibited by law, but sanctioned by custom.

In most of the universities there are what are called *Freitische* (free tables) for the poorer students. Independently of those provided by the government, individuals often leave lands or money to support a certain number of these *Freitische.* A student appointed to one of these, receives his dinner daily at his own house. By this excellent plan, the feelings of the obliged are spared and the intention of the donor fully carried into execution, by the support given to merit in distress. Besides the *Freitische* there are *Stipendiem,* or grants of money appropriated to the same purposes—Bursaries or Exhibitions. The students reside in lodgings, and dine either at a table d'hôte or have their dinner sent them from an eating-house. Boarding is quite unknown. If we have spoken of the German students

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* Autumn upon the Rhine.

with some degree of severity, our readers must not view our remarks as applicable to all. We have too sincere an affection for Germany, too exalted an opinion of her institutions, not to feel keenly the follies of that part of the students who abuse the liberty they enjoy, and afford by their conduct grounds for abridging it.

Among the advantages which the students enjoy, we must particularly notice the cheapness and independence of living at the universities, the low price of books, and the liberality of the public libraries. The general price of lodgings vary at different universities: At Göttingen, which is by far the most expensive, the price of two rooms may be quoted from three to eight louis d'ors for six months; dinner from one to two louis d'ors per month. Every thing else is reasonable in proportion.

No student is so poor as not to possess a library. The difference in the price of books is very great, and yet there is no class of men more generally opulent and respectable than the German booksellers. By contenting themselves with a moderate profit, the books bear a price which put them within the reach of almost every student. In Great Britain, students are obliged to content themselves with elementary books, and to borrow others from public libraries. Independently of the difficulties attending the delivery of works in these institutions, it is no small inconvenience to the student not to have his books at all times, and to be able to study at his own time and in his own way. We are well aware of the difference of price in paper and printing in the two countries, but we contend that they are not such as to justify the difference in price; and if they did, the German booksellers have another drawback: No sooner does a work of merit make its appearance, than a pirated edition is published in a neighbouring state. And yet with all this, books are one-half or two-thirds cheaper. Thus Blumenbach's Physiology sells in Germany at about 5s. 6d. The translation of the same volume in London, a book of the same size and nature, (and, as books go here, a cheap book) sells at 12s. This is a favourable instance, for we could show cases where the proportion is as 3s. 6d. to 15s. We had the pleasure of knowing several eminent booksellers in Germany, and they were unanimous in their opinion that putting extravagant prices on books was not only detrimental to science but injurious to themselves. And yet the German booksellers are not illiberal to authors. We could quote many instances of this in our own profession, and in the other departments of literature sums have been paid for works which would not disgrace the magic press

of Albemarle-street. Voss, the German translator of Homer, received for the first edition 10,000 dollars, and Goethe 1000 dollars for "Herrman and Dorothea," a little poem, which is every where to be bought for a shilling or two. Such examples might be multiplied *ad infinitum.*

There is another advantage which the schools of Germany afford—a very considerable facility of dissection. While our present restraints upon the study of anatomy exist, so that it cannot be pursued to any useful extent, or at any reasonable expence, nor without exposing the student to the vengeance of the law, or the dread of violence from popular prejudice, it is in vain for us to hope to rival the Germans in the study of elementary, much less of minute anatomy. The smallest school in Germany is better provided with subjects than any of our universities or even hospital-schools, and this without violating the feelings of any one. The rooms are in general supplied by the dead bodies of those who die in the hospitals, and who have no friends or relations to claim them. We do not at present enlarge upon this topic, because we propose in an ensuing number to present our readers with a somewhat extended article on the subject. In the mean time, we rejoice that this subject has not escaped the notice of one whose eloquence can hardly fail of success when the object is, as in this case, to benefit the cause of humanity and improve the profession of which he is so great an ornament.*

The public libraries in Germany are better conducted and more useful than ours. They are not so much composed of old and curious books, as of works of general utility. They are perfectly open to the students, nor did we ever hear of a book being purloined or defaced.

In earnestly recommending the schools of Germany to such of our countrymen as may visit the Continent, we must be understood as addressing ourselves only to such as view the profession of medicine in the light of a liberal and enlightened science: to others, the appeal would be in vain. The former we must, exhort, not to be deterred by the manner in which Germany and her schools are often mentioned in this country, and that too by men whose reputation makes them an authority. They speak of the Germans as illuminati, as proficients in animal magnetism and nothing else, as mere book-men, &c. &c.; but neglect to observe, that no

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* See the Hunterian Oration for 1819.

country has adorned the profession of medicine with so many eminent men, or laboured more assiduously in her cause, than Germany, the land of Hoffman, and Richter, and Meckel, and Walter, and Wrisberg, and Zinn, and Schmidt, and Hildenbrand, the land which still boasts of Franck, and Soemmerring, and Blumenbach, and Beer, and Springle, and Hufeland.

The German student enters the profession much better prepared than the generality of our students. A thorough knowledge of the classics, and some acquaintance with natural philosophy are considered indispensable; while most of them possess sufficient literary acquirements to feel the dignity and importance of the profession upon which they are entering. Their diligence is unwearied and universal.

One great cause why the productions of the German school are so little known or valued in this country, is the ignorance of the German language which is so generally prevalent. The war having suspended our intercourse with the Germans, our knowledge of their labours has been derived from French translators, the very worst medium through which it could have been conveyed. It cannot however be denied, that with all the zeal and industry which the Germans have displayed, the benefit derived from the application of their vast learning to practical purposes (whether in our profession or in other sciences), has not been equivalent to what might have been expected from their acknowledged talents and unwearied industry. The fault has not lain with them, but with the peculiar constitution of their country. Divided into a number of small and inconsiderable states, which were bound by no common union and cemented by no common feeling, its general resources were weakened, and too few opportunities afforded for putting scientific discoveries to the test of practical application. Discoveries often lay dormant, or, in the struggle to make them known, were seized by nations more happily circumstanced, and their real country and author forgotten.

Lessing has exposed this feeling in one of his charming fables so happily, that we shall give a translation of it to our readers. "A hen which had become blind, continued to scratch together her little heap of corn. Little did it avail the industrious fowl, for another hen, which was not blind, followed her steps and enjoyed the fruits of her labour. As soon as the blind hen had laboriously scratched up a grain, the other carried it off.—The industrious German collects the knowledge which the lively Frenchman puts to use."

## GÖTTINGEN.

This university was founded by George the Second, when Elector of Brunswick and Lüneburg, on the 7th of December, 1736. The imperial licence had been granted by the Emperor Charles VI. so early as January, 1733, and Lectures were first delivered in October, 1734. The university was solemnly opened on the 17th of September, 1737, and named, after its founder, the "Georgia Augusta."

The celebrity which this university has acquired in so short a period of time, is to be ascribed to the many eminent men it has ranked among its teachers. Of these we need only mention Haller and Richter, Zinn and Röderer among its former, and Blumenbach, Osiander, Langenbeck, and Himly, among its present professors, to prove that its title to be ranked among the first medical schools, is as just as the claims which it undoubtedly establishes on the merits of so many illustrious characters in other departments, to be called the first literary and philosophical school in Germany.

In regard to the course of study to be pursued to entitle the student to a diploma, there are no fixed regulations here, nor, indeed, in any of the Protestant universities of Germany. All that is required is, that the candidate should be able to undergo his examination. No questions are asked respecting the duration of his studies, or the university where he has acquired his knowledge; but, in general, it requires three or four years previous study to be able to pass the examination, which is strict and fair. It embraces all parts of theoretical and practical medicine, including botany and chemistry, and a thesis in Latin is subsequently defended before the university. The expence of graduating is about forty louis d'or, and the examinators are the members of the medical faculty, generally the four eldest. Medical students generally spend three or four years at Gottingen, graduate, and then complete their studies in the hospitals of Vienna or Berlin. It is, in fact, chiefly a literary medical school, and the opportunities of dissecting excepted, bears the same relation to Vienna and Berlin, as Edinburgh or Glasgow does to London. The opportunities for study are unequalled. The free and unshackled use of a most splendid library—the excellent lectures of its celebrated teachers, and these at a very moderate price—the peculiar situation of the university, in a small town, from which public amusements and other temptations to idleness are banished—where there is little or no general society—and where the general tone and habits are

purely literary, are advantages which few universities in Europe combine.

In 1815, the number of students at Gottingen was 860; of these 604 were foreigners, (i. e. not Hanoverians), and 146 medical students:

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| In 1816, there were 1132—of these, | 745 were foreigners— | 234 medical. | |
| 1817, | 1160 | 710 | 223 |
| 1818, | 1158 | 686 | 210 |

An unfortunate disturbance which broke out among the students last year, has greatly reduced the number; but we are happy to learn, that it is rapidly regaining its former numbers, and that the storm which threatened its entire destruction, has purified it of many things which obscured its advantages.

The salaries of the professors depend on government, and are not generally known. They vary according to the merit and popularity of the professor. Thus, a young professor may receive only 400 or 500 dollars, perhaps less; while 1500 are given to tempt a man of established reputation to come and settle in the university. We believe that no professor in Gottingen has more than 1500 dollars—few so much.

There are three hospitals in Gottingen:—1. A medical and surgical hospital, under the care of Professor Himly. 2. A surgical hospital, under Professor Langenbeck. 3. A lying-in hospital, under Professor Osiander. We shall speak more particularly of them immediately. There is also a botanical garden, a museum, chemical laboratory, physical apparatus, and a public library. The lectures of the professors are all delivered in German, and here we may observe, that in no part of Germany is the language better spoken than in Gottingen, and that to foreigners it affords the advantage of a most excellent master, Professor Benecke, Professor of the ancient German, and one of the first Teutonic scholars now living. The terms of study are called Semestres; the one commences on the 26th of April, and lasts about five months—the other some time in October.

The following are the lectures delivered:—Practice of Medicine, at 10—Medical Surgery, at 3—Medical Clinic, at 11, by Professor Himly.—Physiology, at 9—Natural History, at 5, by Professor Blumenbach.—Surgery, from 1 to 3—Diseases of the Eye, at 7—Surgical Clinic, at 8—Neurology, at 6, p. m. by Professor Langenbeck.—Osteology and Syndesmology, Tuesdays and Fridays, at 11—Anatomical Examinations, at 9, by Professor Hempel.—Midwifery, at 9—Medical Jurisprudence, at 4, p. m. by Professor Osiander.—Special Pathology, at 6—Special Therapeutics, at 7, by Professor Stromeyer,

the father.—Chemistry, General Botany, at 7—Agricultural Botany, at 8—Botanical Excursions, by Professor Schrader, Chemistry, at 9—Analytic Chemistry, Tuesdays and Fridays, at 11—Experiments in Chemistry, twice a week from 1 to 3, by Professor Stromeyer, the son. Mineralogy, at 7—Geology, at 6, by Professor Hausmann. These lectures are delivered every day except Sunday. The fee to each course is generally a louis d'or, and never more than two.

Besides the public lectures, the professors are in the habit of giving private instructions to one or more pupils. These are called privatissima. Professors Himly and Langenbeck each give privatissima on the operations of surgery, and on diseases of the eye. Three or four pupils generally unite. The professor commonly receives ten louis d'or for a privatissimum. There are also several private lecturers, but none of equal eminence with the professors.

The professors are, in general, very kind and communicative to the students, and appoint a certain hour for receiving and conversing with them at their own houses.

## THE LIBRARY

Is one of the most splendid and useful in the world, and occupies a large and convenient building in the centre of the town. It consists of upwards of 200,000 volumes. It possesses few manuscripts or curiosities, but aims at general utility. The books occupy nine large halls, and are arranged in a systematic order. In one department are the theological, in another, the medical books, &c. &c. These are again divided, and under the heads of neurology, midwifery, ophthalmology, jurisprudential medicine, &c. &c. the student finds every thing which has been written on the particular subject of his studies. The last alphabetical catalogue consists of 180 volumes folio. There are generally about 3000 books in circulation among the students. To keep pace with the progress of knowledge, about 5 or 6000 dollars (£1000), are annually expended in new works. These funds are derived from what is called the cloister-fund—the produce of the cloisters and convents, which were suppressed at the time of the Reformation, and which in Hanover have always been devoted to the support of libraries and charitable institutions.

This sum would not, of course, be sufficient for the support of this noble library, were it not to receive many donations from authors. The learned societies are in the habits of sending their transactions. Among these we observed the name of

the Royal Society. His Royal Highness the Prince Regent also, has lately presented a most splendid collection of books to this library.

In order to partake of the advantages of the library, it is necessary to produce an order signed by a professor, and over his signature, the title of the book, and the name of the borrower. Every professor gives these orders blank to any student whom he knows, and they are afterwards filled up by the student. Although the professor is responsible, there is no instance on record of a book being purloined. The establishment consists of a head librarian (Reuss), a second ditto (Benecke), two custodes, a secretary, and two assistants. The library is open every day. No fees of any kind are paid.

ANATOMICAL AND SURGICAL SCHOOL.

Although the Anatomical School is professedly under the charge of the Prosector, Professor Hempel, it owes its chief advantages to the diligence and celebrity of the Professor of Surgery, Langenbeck. A building was indeed devoted to anatomical pursuits as early as 1738, but in a literary university we seldom find that much attention is paid to practical anatomy. The Surgical Hospital is a large and commodious building, and has been fitted up in a very judicious and useful manner. It is devoid of architectural ornament, but is placed in an open garden, and well ventilated. It contains two lofty wards, adjoining each other; the one for men, the other for women: each ward contains twelve beds. At the one extremity are the nurses rooms, the other leads to the operation room, which is built in the form of an amphitheatre. Two small wards attached to the operating room, are devoted to diseases of the eye, each containing four beds. Under the Operating Theatre on the ground floor is the Surgical Auditorium, and adjoining it a most splendid collection of surgical instruments and bandages.

Patients are received into the hospital without the payment of any stipend or fees, the character and interest of their complaint being the chief recommendation in an hospital which is purely clinical. A small hospital possesses great advantages, where there is, as in Gottingen, a sufficient number of patients from which interesting cases may be selected. The reputation of this hospital being very great, patients often come a distance of fifty or one hundred miles to it, but only curable and instructive cases are admitted. By these means no semestre passes over without affording the student the opportunity of seeing almost all the important operations.

The Surgical Hospital is attended by from seventy to eighty

students, who are divided into practicanten and auscultanten—i. e. practitioners and listeners. The former consist of those who have attended a previous course, and now take in rotation, the charge of a patient. On doing this they are obliged to give an account of the disease, and answer all questions which may be put by the professor respecting the anatomy, pathology, and treatment of the patient. We were pleased in observing the great attention which Professor Langenbeck paid in these clinical exercises to relative anatomy. He omitted no opportunity of impressing on the students, that the mere dissection of bodies could never make them good anatomists, and that as surgery without the knowledge of anatomy would be a dangerous art, so anatomy without a constant reference and application to the living body would be vain and futile.

Professor Langenbeck in his lectures on surgery, which he delivers daily from one till three o'clock, gives half his course in a semestre. They might more properly be called anatomical and surgical lectures, for the professor first demonstrates the anatomy of the different parts in their healthy state, before he proceeds to speak of them in the various forms of disease which require surgical assistance. The Anatomical Theatre is annually supplied with about eighty bodies. During the winter these are used for anatomical demonstrations, and in summer are devoted to the performance of surgical operations. The anatomical demonstrations and surgical lectures are generally attended by 120 or 130 students, of these about forty are *praeparanten* (dissectors), and assist in the making of anatomical preparations.

The foundation of the Surgical Hospital is entirely due to Professor Langenbeck. In 1807, at his representations, a certain sum was appropriated to its support from the Cloister-fund. In 1808 the professor built the present hospital, which is still his own property, the Hanoverian Government paying him a yearly rent for it. The beautiful collection of surgical instruments also belongs to the professor. Besides those which he has himself collected, he purchased the collection of Heister, which, in an historical point of view, is probably unique. The whole as it now stands is undoubtedly the first in Germany. It comprises all instruments that have ever been used in surgery from the earliest days to the present time.

Professor Langenbeck, as a practical surgeon, is unrivalled in Germany. We have seldom seen a man so enthusiastically devoted to any pursuit, or who brought to the profession of surgery more capability of excelling in it. He has been known for some time as an excellent anatomist, but it was his situation

in the army that brought him into notice as a surgeon. He particularly distinguished himself at Waterloo, where he held the office of surgeon general to the Hanoverian army, by his indefatigable zeal, brilliant operations, and the excellent arrangement of his department. He not only acquired great distinction, but is said to have enriched himself during the campaign. It is much to his credit that all these circumstances have rather contributed to increase than slacken his zeal and exertion. He is unwearied in the pursuit of his favourite studies. Although he has a very considerable practice, and lectures five hours every day, he is in the dissecting room before it is light, and devotes to it every moment which he can spare. He has founded a museum, chiefly formed from the labours of himself and pupils, and which contains some very beautiful preparations. He is also the author of a periodical work, and has written some other books.

Of his lectures we cannot speak from personal knowledge. From the report of others, and the notes of our friends, we should judge them to be plain practical lectures, such as would be very acceptable in our English schools. They are not, however, suited to the taste of German students, who expect from their professor not only an account of a disease, but the opinions of every author who has ever written on it from the earliest ages downwards. Now Professor Langenbeck is more a practical than a book man. His time has been more spent in the dissecting room than the library, and he is consequently not so well versed in the literature of surgery as some of his countrymen who have probably never handled a knife. One of the highest proofs of good sense and zeal for his profession which the professor has given, is complying with the feeling of his country, and devoting a large portion of his time to the study of ancient and foreign authors. As an operator, he is unrivalled in his own country, and we are not aware that he is excelled in any. He is clear and decisive in his judgment—rapid and elegant in his operations. His whole style of operating resembles very closely that of Mr. A. Cooper.

*(To be concluded in our next.)*

Art. IV. 1. *Dr. Conr. Joh. Martin Langenbeck's Prüfung der Keratonyxis, einer neuen Methode den grauen Staar durch die Hornhaut zu recliniren oder zu zerstückeln, nebst erlaüternden Operationsgeschichten. Mit 2 Kupfertafeln.* Göttingen, bey Danckwerts, 1811. 8vo.

*An Inquiry concerning Keratonyxis, a new Method of reclining or of dividing Cataract through the Cornea, illustrated by Cases. By Conr. John Martin Langenbeck, M.D.* pp. 74.

2. *Beyträge zur Chirurgie und Augenheilkunst. Von Franz Reisinger, Dr. der Medicin und Chirurgie. Erstes Bänchen. Mit einer Kupfertafel.* Göttingen, bei Dieterich, 1814. 12mo.

*Contributions in Surgery and Ophthalmology. By Francis Reisinger, M. & C. D. 1st Volume.* pp. 184.

3. *Ueber den Zustand der Augenheilkunde in Frankreich; nebst kritischen Bemerkungen über denselben in Deutschland, von J. Bapt. Wenzl, der Medizin und Chirurgie Doctor.* Nürnberg, bei Schrag, 1815. 12mo.

*On the State of Ophthalmology in France; with Critical Remarks on the same in Germany. By J. Bapt. Wenzl, M. & C. D.* pp. 128.

Each of the four operations for cataract, depression, reclination, extraction, and division, may be performed either through the cornea or through the sclerotica.* There have not been awanting advocates for the performance even of extraction, by an incision behind the cornea, and consequently through the sclerotica and choroidea. Into this question, so far as extraction is concerned, there is no necessity for entering at present. It is not so much our object in this article to shew, that certain operations which have been proposed for the cure of cataract are utterly to be rejected, as to inquire what are the safest of the several methods now in general use, either in England or on the Continent. In every question of operative surgery, it is an object of the greatest importance, to discover that operation in which there is the least pain and danger for the patient—in which the least extent of important or irritable parts is injured—that operation which recommends itself by the greatest simplicity in its manipulations—and in which the

* The important distinction of depression from reclination is explained at page 299, Q. J. F. M. S. No. III.

fewest instruments are employed. To spare this most delicate and useful organ, as much as is consistent with the recovery of sight, is the principle upon which every surgeon who is acquainted with the structure and functions of the eye will proceed in choosing an operation for cataract. The display of dexterity—the rapidity with which the eye is enabled to enjoy a momentary vision—the novelty of the operation—these and such like motives he never will allow to influence his choice.

What are the comparative advantages, then, and disadvantages, of performing depression, reclination, or division, through the CORNEA and through the SCLEROTICA? What are the comparative dangers of a wound of these parts? If the needle be entered behind the cornea, the most important and delicate textures of the eye are either unavoidably injured or greatly endangered; namely, the conjunctiva, the sclerotica, the choroidea, the hyaloidea, the annulus gangliformis, the ciliary processes, the long ciliary vessels and nerve, the retina, and the iris. Most of these parts are very irritable in the pathological sense of the word; several of them are sensible; and some of them are destined to convey nutrition or energy to other textures of the eye. The first four of the parts now enumerated are necessarily wounded in this method of operating; the others are endangered in every case, and it is exceedingly rare that all of them escape.

The conjunctiva, where it covers the sclerotica, is very sensible, strewed with red vessels, and apt to become inflamed on slight injury. Should one or more of its red vessels be wounded, extravasation takes place under the tunic, and a small thrombus forms, which, if not opened, causes a constant and uneasy feeling of pressure in the eye.

The needle can neither be introduced through the fibrous, dense, and very resisting sclerotica, nor withdrawn, without considerable violence. The chief danger in wounding this tunic arises from the aptness of mechanical causes to excite severe inflammation, both in the sclerotica itself, in the conjunctiva, and even in the whole internal parts of the eye. The wound of the sclerotica by the needle may frequently be compared, from the severity of its effects, to the pricking of an aponeurosis, an accident which commonly produces extensive suppuration.

Next is the choroidea—a membrane almost entirely composed of blood vessels, several of which must be divided, with whatever precautions the needle is introduced—a membrane which is intimately connected with the iris, the part above all others most apt to inflame after the operations for cataract—a membrane also which is in close contact with the retina.

The injury done to the membrane in which the vitreous humour is contained and by which it is secreted, in the introduction of the needle, though not extensive, must still be regarded as adding to the risk of internal inflammation and consequent disorganization of the eye. The injury even of a part the function of which is not understood, but which is evidently constructed with much care, as is the Petitian canal within the hyaloid membrane, must not be overlooked. The chief danger from the wound of the four membranes now enumerated is indeed inflammation, terminating in closure of the pupil, hypopium, or complete suppuration and atrophy of the eye.

There are other dangers which are attendant upon the method of operating through the sclerotica, and which cannot always be avoided, however steady and expert the operator may be; although it is generally the restlessness of the patient which is in fault when any of the following parts are wounded.

The wound of the annulus gangliformis and subjacent ciliary processes takes place from the needle being entered too near to the edge of the cornea, and that of the long ciliary vessels and nerve from its being entered exactly in the equator or horizontal diameter of the eye. The wound either of the ciliary processes, or of the long ciliary vessels, is attended by instant and occasionally profuse hæmorrhagy into the aqueous chambers. This is not to be wondered at, when we consider that each ciliary process is supplied by at least twenty arterial branches; and that the long ciliary artery on the temporal side of the eyeball, being one of the two arteries destined for the nourishment and functional expansion of the highly vascular and erectile iris, is of very considerable size. The hæmorrhagy which takes place completely obscures the field of the intended operation, which must therefore either be left unfinished or hurried over in the dark; the presence of the blood which is effused into the aqueous chambers adds greatly to the dangers of inflammation, and especially of iritis; and the blood may even continue to flow, until the chambers are much distended. Even the mere injury of the ciliary processes, which are so intimately connected with the iris, independently of hæmorrhagy, is likely to excite iritis.

When the long ciliary vessels are divided by the needle, the accompanying ciliary or iridal nerve can scarcely be avoided. One of the consequences of dividing the vessels of the iris and this nerve, is a state of inactivity, or if we may be allowed to apply that term to the disease of a part entirely destitute of mus-

cularity, a state of paralysis of the iris. Dr. Wenzl,* in the Comparative View of the French and German Surgery of the Eye, of which we have given the title at the head of this article, (and to which we mean hereafter to direct our readers' attention more particularly), while speaking of the eye-operations which he had witnessed in the French hospitals, remarks, that he had seen reclination performed generally with rather a rude hand, and nearly in the equator of the eyeball, a situation which will also be found the most commonly selected by the operators of this country, and which plates in our books of surgery not unfrequently represent as perforated by the needle. Several patients, Dr. Wenzl observes, saw extremely indistinctly after the operation was finished; and one, not at all. The enraged operator blamed the imbecility of the patients. The burning candle was at every morning visit poked into their eyes; but day after day passed over, without any return of vision. A slight iritis appeared in some cases to have followed the operation, in consequence of which the pupil remained cloudy, as if it had been occupied by the thinnest gauze. The convexity of the eye soon began to diminish, and the cornea, without becoming actually dim, to lose its lustre, and to shrink into the finest and almost imperceptible folds; the anterior chamber became evidently contracted in capacity, frequently above the half or towards two thirds, without any projection of the iris, which rather appeared to be in a state that might be called relaxed, like a slackened sail no longer moved by the wind. The iris remained altogether insensible on varying the degrees of light; and the pupil was more or less contracted, but not distorted. Had this withered state of the eyeball followed extraction, it might have been suspected that the escape of a considerable portion of the vitreous humour had been in fault. The same state of the eyeball frequently follows on amaurosis, but not until this disease has continued for several years. In the cases in question, this state of the eyeball succeeded quickly to the operation of reclination; although before the operation, the patients perfectly distinguished the changes of light, and the pupil manifested the liveliest mobility. Now, in these cases, to what are the paralysis of the iris, the deficiency of the aqueous humour, the fading of the eyeball, and the insensibility of the retina, to be attributed? Dr. Wenzl does not appear to have the least hesitation in attri-

* This author must not be confounded with any of the three Wenzels, whose writings are well known in England.

buting these unfortunate events to the operation, and not to the natural process of disease. The paralysed state of the iris may be attributed to the wounding of the ciliary vessels and nerve, or of the annulus gangliformis and ciliary processes. The secretion of the aqueous humour appears, he says, to have been checked, and the retina to have become less extended than it naturally is, or even corrugated. Even these effects Dr. Wenzl is inclined to attribute to the wounding of the same parts; and he considers the ciliary processes as intimately connected both with the action of the iris and the secretion of the aqueous humour—and thus, as well as in other ways, connected with the function of vision.

M. Montain* holds the whitish circle at the anterior termination and on the external surface of the choroidea to be of the same structure as the ganglia of the great sympathetic—that it belongs in fact to the nervous system—and that it is probably through its means that the iris possesses its moving powers; and Soemmerring appears, from the name which he bestowed upon the circle in question, namely *annulus gangliformis*, to have been of the opinion more recently adopted by M. Montain. This circle we need scarcely say covers the ciliary processes. If the opinion concerning its function now stated be correct, the wounding of it alone may perhaps be productive of those effects which Dr. Wenzl inclines to attribute to the injury of the ciliary processes, parts no doubt extremely vascular, but to which no nerves whatever have been traced.†

We enumerated wounding of the retina amongst the avoidable dangers of operating through the sclerotica, likely to be avoided, however, only in the hands of a surgeon whose knowledge is founded upon the basis of anatomy, and who is operating upon a steady patient. If the needle be entered, as some English authors recommend it to be entered, so far as two lines, or the sixth of an inch behind the cornea, the retina must necessarily be wounded. Now, of such a wound, the consequences have been very differently represented. Instant vomiting scarcely to be stilled, convulsions of the muscles of the eye, or even of

* Traité de la Cataracte, contenant l'enumeration des differens moyens employés pour en obtenir la guerison. Lyon, 1813.

† An anatomical error in the 2d Volume of Mr. Wardrop's Essays on the Morbid Anatomy of the Eye, is the description of the choroid coat and ciliary processes as "plentifully supplied with nerves." Page 59 and 70. Neither Zinn, nor any other anatomist has been able to trace a single fibrilla of nerve to these parts. See Zinn's Descriptio Oculi, page 191 and 192.

other parts of the body, severe pain, which in some cases has continued for life, and amaurosis, have been asserted by many to be the consequences even of the slight wound of the retina, caused by the entrance of the needle into the eye. Others have represented such a wound, or even a much more extensive injury of the retina, as unattended by any considerable or permanent ill effects. Dr. Wenzl, for instance, is convinced that the retina has been a hundred times wounded by incautious oculists, or through the restlessness of the patients, without amaurosis having followed. As for the vomiting which occasionally occurs on the needle entering the sclerotica, and which deranges the whole operation, we are inclined to attribute it to a wound of one of the ciliary nerves, and especially of the long ciliary nerve. We have already had occasion to take notice of the connection which exists between these nerves and the great sympathetic.*

Wounding of the iris is another danger in operating for cataract through the sclerotica, whether by depression, reclination, or division. This danger arises from the extreme smallness of the posterior chamber. So small, indeed, is that chamber, that in introducing the needle into it, the instrument may be regarded rather as passing between two membranes, namely, the iris and the capsule of the lens, than as entering any cavity. It is rare that a wound of the iris occasioned by the needle entering the posterior chamber is considerable in extent; but the chief danger in such cases is from the inflammation which is excited in the iris, by the injury done to its texture. Dilatation of the pupil by belladonna is not recommended in operating through the sclerotica, as the lens is apt to fall forwards through a widely dilated pupil into the anterior chamber, whence it cannot easily be brought back, and not without greatly irritating the eye. Moderate dilatation by hyosciamus is to be preferred; but even this, so far from lessening the danger of wounding the iris, according to the observation of Dr. Himly, must rather augment it, as the pupillary edge of the iris is turned backwards in the state of dilatation.

Such are the disadvantages and dangers of operating through the sclerotica. If, on the other hand, we penetrate with the needle through the cornea, in the *first* place, the danger of wounding the iris is much diminished; in the *second* place, the dangers of injuring the annulus gangliformis, the ciliary processes, the long ciliary vessels and nerve, and the retina, are

* No. I. page 59.

entirely avoided; and, in the *third* place, instead of penetrating through four distinct membranes, all of them very irritable, and one of them exceedingly vascular, we penetrate through a part entirely destitute of red vessels, destitute as far as has yet been observed, of nerves, and hence insensible, possessing a low degree of organization, and having scarcely any tendency to become inflamed.

The cornea is covered, indeed, by a very thin lamina of conjunctiva, and lined by another lamina of the serous kind, equally delicate; but both these layers are assimilated to the texture of the fibro-cartilaginous substance which is included between them. From its fibro-cartilaginous texture, the cornea is much more easily pierced by the needle than the fibrous and closely interwoven sclerotica. If experience demonstrates in numerous happy recoveries which take place from the large incision made in the operation of extraction, to what extent the cornea may be wounded with impunity, penetrating through the same part with a small, pointed, sharp, and finely polished needle, will certainly be almost completely free from danger. Accordingly we find that any inflammation which ensues upon an operation performed with the proper precautions through the cornea, and in which the iris especially has been carefully avoided, is merely a superficial conjunctivitis. The cornea has no close nor organic connection with the choroidea, nor with the iris, nor with the retina, nor with the vitreous humour; that is to say, it neither touches any of these parts, nor do vessels or nerves pass from any of these parts into the cornea, nor from the cornea into any of these parts; whence there comes to be much less risk of internal inflammation of the eye from a wound of the cornea than from a wound of the sclerotica.

It is a great advantage in operating through the cornea, that the needle is passed through a part which is transparent, so that we see the whole manipulations of the operation; whereas, when the needle is passed through the opake sclerotica and choroidea, its point is for some time hid from the operator's view, and must therefore be moved in the dark, with the risk of injuring parts of much delicacy and importance, namely the ciliary processes and the iris, the former of which are endangered in the method of operating through the sclerotica, not by the first puncture alone, but even after the needle is fairly through the tunics. The lens also is to be avoided in executing the second period of the operations performed through the sclerotica, as we formerly had occasion to state at page 300. The utmost dilatation of the pupil by narcotics, is unable to remove this objection to the method of operating through the sclerotica.

It may also be observed, that the wound of the choroidea in this method of employing the needle, is apt to produce the sudden contraction of the pupil which has been artificially dilated.

The conclusion which we believe we are entitled to draw from this comparison of the disadvantages and dangers of operating through the sclerotica, with those which attend the passage of the same instrument through the cornea, is, that if depression, reclination, or division can be as well performed in other respects, through the cornea as through the sclerotica, nay, unless some very evident advantages in the succeeding steps of these operations be attached to the latter method of entering the needle, the method through the cornea ought unquestionably to be preferred, as by far the less disadvantageous and less dangerous of the two.

We are ready to grant, that the Depression of a cataract cannot be carried *so far*, if that operation be performed by the needle introduced through the cornea, as if it were performed by the same instrument passed through the sclerotica; that is to say, that the opake lens cannot be so deeply depressed in the former method as in the latter. The depth, however, to which the cataract can be depressed by the needle passed through the sclerotica, and to which it actually is depressed by the generality of English operators, is to be regarded as one of the capital objections to the operation of depression. It is impossible to depress a cataract of the ordinary size of the crystalline lens so deeply as is usually represented in our books of surgery, and as is usually done by surgeons who have neither particularly studied the anatomy of the eye, nor made themselves acquainted with the important distinction, first established in the German schools, of depression and reclination, without bruising the retina, and occasionally even forcing the depressed lens between the retina and the choroidea, and lacerating both these membranes.

Whatever doubt Dr. Wenzl may throw over the effects of slight wounds of the retina, in introducing the needle, the anatomy of the parts and the dissections of Daviel equally demonstrate beyond the shadow of a reply, that whenever the operator so deeply depresses a cataract that the handle of his needle rises above the horizontal position, he is literally putting out the eye of his patient.*

* We do not know that the history of Daviel, and of his improvement is sufficiently known in England, although he stands almost as high above the oculists

We shall not be bold enough to say that there is no case in which depression should be preferred to reclination. Certain we are, both from the relative anatomy of the parts concerned, and from the testimony of the distinguished surgeon now mentioned, that an opake lens of the usual size ought never to be depressed farther than is done by bringing the handle of the needle, introduced through the sclerotica at the distance of a line below the equator of the eyeball, to the horizontal position. Couched to this depth, we grant that a cataract of the ordinary bulk will be nothing more than out of the axis of vision, and that it will be very apt to reascend into its former place.

As for RECLINATION, its advantages over depression are chiefly these: 1st. That the reclined lens being much more extensively covered, on its superior flat surface, by vitreous humour, than it is possible for a depressed lens to be, it is much less apt to reascend. 2d. That the lens, after reclination, lies imbedded on every side by vitreous humour, and does not at all touch the retina.

The chief disadvantage of reclination, compared with depression, is, that a much larger portion of the vitreous humour is lacerated in reclination than in depression. What! cry the oculists, who evidently suppose that the vitreous humour is but a mass of unorganized jelly, and that a person can see as well with the vitreous humour in a state even of complete dissolution, as if it were perfectly healthy, can that be any argument against reclination? That those who deal so freely with the internal parts of the eye in their operations, and treat so slightly the injury which they do to the vitreous humour, are in a dangerous error, must be evident to every one, who either is acquainted with the mechanism of vision, or reflects that the eye is a part "exquisitely vascular, and consisting of humours which

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as does Cheselden himself. He was a French Navy Surgeon, and first distinguished himself by his courage and professional abilities during the plague at Marseilles in 1719, on which occasion he was honoured with a cross from the king, having for motto, *Pro Fugata Peste.* He afterwards gave Lectures on anatomy and surgery, for several years, with great success. In 1728, he began to direct his attention particularly to the diseases of the eye, and after a long series of experiments, as to the best manner of performing depression, and numerous dissections of those who had been operated upon unsuccessfully in that method, both by himself and other surgeons, he entirely abandoned it, and betook himself to his newly invented extraction. In 1752, he had operated 206 times by extraction, and in 182 of these cases with success.

are, perhaps, more than any other parts of the body in a state of continual circulation."*

Those, in the first place, who have bestowed the slightest attention on the optical structure of the eye, are aware that the vitreous humour is a lens, the healthy density of which is necessary for the preservation of its peculiar refractive power. Hence dissolution of the vitreous humour, a disease most commonly combined, even in its commencement, with amaurosis, and always so in its state of complete developement, produces imperfect and coloured vision, the eye suffering both as a dioptric instrument, and as a dioptric instrument which, in its natural state, is achromatic. Now, it is upon the integrity of the hyaloid membrane that the healthy density of the vitreous humour depends. But that membrane, once lacerated and broken down, is never after regenerated. The space which it occupied becomes filled with aqueous humour, a medium which, from its inferior degree of density, is unable to perform the refraction executed in the natural state of the eye by the vitreous humour.

We beg leave, in the second place, to remind the anatomical reader, that the vitreous humour is nourished by a branch of the central artery of the retina, which, advancing through the substance of the humour, distributes itself to every cell of the hyaloid membrane, and having gained the posterior hemisphere of the crystalline capsule, spreads out its remaining branches upon that membrane, in a manner similar to the distribution of the phrenic nerve on the convex surface of the diaphragm. It is from the direct injury done to the blood vessels of the vitreous humour, as well as to the membrane which incloses and secretes it, that this essential part of the eye so frequently becomes disorganized and dissolved after reclination, and after division performed through the sclerotica. It is from the shock given to the whole vascular systems of the eyeball, that amaurosis, attended by softness and withering of the eye, so frequently follows the same operations. Nor need this, surely, excite surprise, when it is considered, that the retina and the vitreous humour are both of them nourished by the arteria centralis retinæ.

To what we have here urged regarding the injury done to the arteries of the vitreous humour and posterior hemisphere of the capsule in reclination and division through the sclerotica, we may add the opinion of Walter, founded on the injury done to

* John Bell's Principles of Surgery, Vol. III. page 10.

the venous system of the eye in similar operations:—" Depressio cataractæ si capsula lentis in facie posteriore per suppressionem *à la boutonniere* dictam aperitur, est pessima, in hac enim operatione evitari non potest, quin omnes venæ et arteriæ lentis et corporis vitrei lacerentur. Novissimum illud experimentum nuper in Germania a celeberrimis viris propositum, scilicet si capsula lentis adficitur atque opaca fit, capsulam cum lente simul extrahere, mihi valde periculosum videtur, in hoc enim casu omnes venæ et arteriæ, quæ nutriunt humorem vitreum destrui necesse est, et lentam equidem sed inevitabilem coecitatem subsecuturam esse, quilibet facile perspicit."* The same argument which Walter applies to the proposal of extracting the capsule, may be urged against reclination and division through the sclerotica. Division through the cornea, and extraction, are the only operations in which no injury is done to the vascular systems of the internal parts of the eye.

We consider the unavoidable injury, then, done to the vascular systems of the eye in reclination, as the great objection to this operation. Were it free from this objection, we should consider reclination as certainly preferable to extraction. Notwithstanding this objection, reclination is in many cases the only operation which the circumstances of the case allow the surgeon to attempt. Though he must regard it as an operation highly dangerous for the eye, still in these cases he will practise it, as he would do lithotomy or any other operation in surgery, which, though it may force him to anxious thought, and much study, and many repetitions on the dead body, yet he will perform as the only means of relief which is in his power. In short, when division through the cornea, and extraction, are both of them contraindicated, the surgeon will have recourse to reclination.

Can reclination be performed through the cornea? The three authors now before us are of opinion that it may be performed, in a sufficient manner, by the needle introduced through the lower part of the cornea, the pupil being previously dilated as much as possible by belladonna. The experience of Professor Langenbeck leads him to speak decidedly in favour of this mode of operating in cases of hard cataract.

The extract of belladonna, moistened to the consistence of cream, is to be applied to the eyelids and eyebrow, about two hours before the operation, and at the same time a filtered solution of five grains of the same extract in a drachm of distilled

* Epistola Anatomica ad Wilhelmum Hunterum de Venis Oculi. Berolini, 1778, pag. 30.

water is to be dropped within the eyelids, while the patient lies on his back. About half an hour before proceeding to the operation, these drops are to be repeated. Through the influence of this narcotic, the iris is so much narrowed, that a mere edge of it remains visible. The needle being now introduced into the anterior chamber, about a line from the lower edge of the cornea, and one of its flat sides being applied to the anterior surface of the cataract, this may be reclined completely below the axis of vision, without touching the pupillary edge of the iris, merely by elevating the handle of the instrument.

Besides avoiding the disadvantages and dangers attendant upon an operation through the sclerotica, there are certain additional advantages in performing reclination through the cornea. The fulcrum in this operation is steadier, so that the lever, or needle, can be used with greater ease and certainty. Through the cornea, the cataract is also reclined exactly into the middle and lower part of the vitreous humour, that is to say, opposite to the inferior straight muscle; whereas, in reclination through the sclerotica, the operation usually practised by Professor Scarpa, the lens descends obliquely, so as to occupy that part of the vitreous humour which is opposite to the interval between the external and inferior straight muscles; where it lies, nearer to the surface of the retina, than in the situation assigned to it by reclination through the cornea. The vitreous humour is less injured in reclination through the cornea than through the sclerotica. This in itself is an advantage; but it is also to be considered, that the less the vitreous humour is injured in the operation, the more capable it is of closing upon the displaced cataract, and thus of preventing its re-ascension. In reclination through the sclerotica, the needle is apt to pass between the lens and the anterior hemisphere of the capsule, and thus the lens is reclined while the anterior hemisphere of the capsule remains. This membrane, thus left behind, is exceedingly liable to become opake; and then it requires to be removed by a second operation. Through the cornea the reclination of the capsule takes place along with that of the lens.

Let us now turn to the operation of Division. Practised through the sclerotica, this operation, together with almost all the disadvantages and dangers of reclination performed in the same way, combines that slow removal of the cataract which is the peculiar disadvantage of division. The wound of the irritable conjunctiva, the wound of the resisting sclerotica, the wound of the vascular choroidea, the danger of wounding the annulus gangliformis, and ciliary processes, the long ciliary

vessels and nerves, the retina, and the iris; all these disadvantages and dangers are joined in the operation of division through the sclerotica, with the destruction of the posterior hemisphere of the capsule and a considerable portion of the vitreous humour, and the laceration of so much of the arteria centralis retinæ as is distributed to these parts. Added to all this, is the tedious recovery of sight; the solution of the divided lens being frequently protracted to two months or even longer. Were there only two methods of curing cataract by operation, division through the sclerotica, and reclination through the sclerotica, we should not hesitate in preferring the latter as the speedier and not more dangerous of the two; but if we compare division through the *sclerotica*, with reclination through the *cornea*, we hesitate as little to prefer the latter, both as the speedier and the safer method of cure.

The operation of division through the cornea is a much more ancient method of curing cataract than is generally supposed. Galen mentions that it was in his time an old tradition, that for the operation for cataract we were indebted to goats, which, when attacked with that disease, pricked their eyes against a sharp reed, and thus recovered sight. It is probable, from this absurd tradition, that the first operation practised for the cure of cataract was a division or punctuation of the lens through the cornea.

Albucasis tells us that he had been informed there were some who pumped out the cataract through a hollow needle, though he himself had never seen that method employed. "Et jam quidem pervenit ad nos de quodam ex illis qui sunt de Alayrach, quia dixit quod factum fuit in Alayrach magdaham perforatum quo sugit aqua. Verum ego non vidi aliquem in terra nostra qui fecerit illud, neque legi illud in aliquo ex libris antiquorum et est possibile ut sit illud novum, et istae sunt formae specierum magdaham. (Here Albucasis gives three figures.) Fiant formæ prædictæ ex ære, et sint extremitates earum subtiles, sit triangulata extremitas acuta."* Now, in cases of fluid cataract, there is no doubt that the *gutta obscura*, in which the Arabians believed cataract to consist, would be discharged through the tube introduced by these operators through the cornea; but even when the cataract was not fluid, when only the aqueous humour was discharged, the wound made through the anterior hemisphere of the capsule with the extremity of the tube, would frequently be sufficient in cases

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* Methodus Medendi, autore Albucase. Basileæ, 1541. pag. 68.

of soft cataract to produce a cure, by the admission of the aqueous humour within the capsule and the action of this fluid on the lens. We shall presently see that the operation of Conradi amounted to little more than such a perforation of the anterior hemisphere of the capsule.

The operation described by Albucasis appears to have been lost for several hundred years. The next whom we find making use of any similar method of curing cataract is Mathiolus, whose name is sufficiently known as the first to introduce the external employment of mercury in the cure of syphilis. We have not, indeed, been fortunate enough as yet to meet with the passage in which Mathiolus himself describes his operation. He appears, however, to have used a tube similar to that referred to by Albucasis, which having introduced through the cornea and through the pupil, he employed to convey a number of very fine and pointed gold wires, by means of which he punctured the whole anterior hemisphere of the capsule, and then withdrew the tube. "Anne vero Mathiolus Italus primus fuit, qui solubilitati lentis confidens, suam operandi methodum huic conformavit? Hic simplicis fili orichalcini loco, filis aureis in penicilli speciem colligatis per Albucasi tubum traductis lentem discerpere contendit."* The effects of such an operation must have been such as we have already attributed to that of the Arabians, namely, the admission of the aqueous humour within the capsule, and the solution of the cataract.

Neither the Arabians nor Mathiolus knew, indeed, the modus operandi of the remedy which they employed, for it was not till long after, that the renovation and solvent power of the aqueous humour, as well as the real nature and seat of cataract, were made known. Volcherus Coyter, the disciple of Fallopius, whose work on anatomy was published at Nurnberg in 1573, is reputed the first who taught the renovation of the aqueous humour; and Paul Barbette, whose Surgery was published at Amsterdam in 1658, is one of the earliest writers, if not the very earliest, to speak distinctly of the disappearance of a cataract, when merely cut up and left in its ordinary situation.† What was a conjecture in the minds of Lasnier

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* Friedericus Jaeger de Keratonyxidis Usu. Viennae, 1812. pag. 15.

† Licet cataracta non satis intra pupillæ regionem sit depressa, dummodo in particulas sit divisa, perfecta visio intra sex aut octo septimanas sæpissime redit, licet tota operatio absque ullo fructu peracta videatur; quod aliquoties experientia edoctus loquor. Chirurgia Barbettiana, Pars I. Cap. xvi. Lugd. Batav. 1672. In another edition the same fact is thus expressed :—Etiamsi sufficienter depressa

and Quarré respecting the lens, became demonstrated by the anatomical investigations of Maître-jan and Brisseau; the former of whom also relates several cases of considerable portions of the lens in a state of opacity being precipitated, as he terms their disappearance, in the anterior chamber.* Read, who published his "Short but Exact Account of all the Diseases incident to the Eyes," in 1706, had employed the words *consumed* and *dispersed*, to express the same disappearance. The observation of Samuel Molineux,† that the opake lens was sometimes slowly wasted away in the vitreous humour after the operation of depression, probably led to the use of the term absorption, for expressing the disappearance of portions of the opake lens in the aqueous humour, although this disappearance is neither a precipitation as Maître-jan styled it, nor an absorption, but a solution. Mr. Pott really appears to have been the first to make use of the term which we now employ, namely, dissolution.

After Mathiolus, Gleize is the next who deserves to be mentioned in the history of the operation of division through the cornea. It happened that a patient on whom this surgeon was about to perform the operation of extraction made an unlucky motion with his head just as the knife had penetrated the cornea, so that the knife slipped out from the punctured inci-

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haud erit cataracta, visum tamen sæpe post septimanas septem vel octo rediisse, in variis observavi, modo in partes varias divisa fuerit. Pauli Barbette, Opera Chirurgico-Anatomica. Lugd. Batav. 1672. pag. 66.

Having the little treatise of Barbette in our hands, we may extract the following sentence from it, although it belongs to another subject. In explaining his views of the causes of aneurism, he makes the following observation:—Arteriæ omnes, exceptis iis, quæ per cerebrum partesque omnes alias consistentes magis, dispersæ sunt, tunica duplici gaudent; harum interna corrosa aut rupta, externa in tantum extendi potest (absque ruptura, quicquid etiam contradicant alii) ut aneurisma causetur. Nihilominus ubi tumor hic pugni magnitudinem habet, haud fieri potest, quin simul etiam externa corrosa aut rupta sit.' Much valuable surgical information is contained in this manuel of Barbette. He is now shoved, indeed, into the corner of an upper shelf, to make way for those who have robbed him. He had been a man even of considerable humour, if we may judge from the manner in which he begins his chapter on the anatomy of the head. Nunc ad Palladis arcem pergimus, aliquando vacuam, et aliquando stultitia repletam.

* Maître-jan—Traité des Maladies de l'Oeil. Seconde edition. Troyes, 1711. The first edition appeared in 1707.

† Philosophical Transactions abridged by Reid and Gray. Vol. 6. Part 4. page 175.

sion which it had made, and was followed by the aqueous humour. Apprehensive of the difficulties of re-introducing the knife and completing the section of the cornea in these circumstances, and yet unwilling to leave the patient unoperated upon, Gleize introduced a couching-needle through the puncture of the cornea, freely lacerated the anterior hemisphere of the capsule, and then withdrew the needle. In twenty days, the cataract was dissolved, and the pupil perfectly clear. Gleize repeated this method of cure in a number of cases, exactly in the manner described. He observed that the softer the cataract, the speedier was the solution. He found this to vary in duration from fifteen to fifty days. He observed also that through the cornea he could depress the cataract. Not having Gleize's work* at hand, we are unable to say whether he recommended this method to be employed from the first, or considered division through the cornea merely as a supplementary operation to an extraction which had not been completed, just as Pott, ten years before, had considered division through the sclerotica as supplementary to an imperfect depression. Richter, in the analysis he gives of Gleize's work, in the tenth volume of his *Chirurgische Bibliothek*, does not speak as if Gleize had recommended this operation as more than supplementary.

If Gleize regarded his operation as merely supplementary, the honour of having been the first to propose a distinct method of operating by division through the cornea, belongs to Conradi of Nordheim. In 1791, this surgeon published an account of his operation in the first volume of Arnemann's Magazine for Surgery. Conradi at once passed a needle, or rather a small lancet-shaped knife, through the cornea, opened the anterior hemisphere of the capsule, and then withdrew the instrument, leaving the cataract to be dissolved; an operation the simplest of all those which have been proposed for the cure of cataract, being executed with a single instrument, and interesting only the cornea and the capsule.

The operation of Conradi was quickly put to the test in different parts of Germany. In many cases it was found completely successful; but in others the punctured incision of the capsule was found to heal up, and thus the absorption of the cataract to be interrupted. This led Buchhorn, of Magdeburg, to add several very important steps to the operation of Conradi, namely, the division of the lens as well as of the capsule, and the bringing forward of the fragments of the cataract into the

* Nouvelles Observations Pratiques sur les Maladies de l'Oeil. Paris, 1786.

anterior chamber with the flat side of the needle.* The division of the lens, and the introduction of its fragments into the abundant and continually renovated menstruum of the anterior chamber, hasten the solution of the cataract and the consequent clearing of the pupil. The ultimate success, however, of Buchhorn's operation, as of Conradi's, depends upon the degree in which the anterior hemisphere of the capsule is divided. If the anterior hemisphere of the capsule be so divided that the remains of that membrane cannot afterwards reunite, then the solution of a cataract of ordinary consistence is certain, even if it be left undivided in the posterior chamber.

Such is a short history of the operation of division through the cornea.† Among those who have practised the operation of Dr. Buchhorn with the greatest success, is Professor Langenbeck, of Göttingen, a surgeon of the most distinguished talents. Professor Langenbeck twice performed this operation in the presence of Richter, the venerable father of the German ophthalmology, whose honoured chair in the university of Gottingen, Professor Langenbeck now occupies.‡ He has pub-

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* Buchhorn de Keratonyxide. Halae, 1806. Die Keratonyxis, eine neue gefahrlosere Methode den grauen Staar zu operiren. Von W. H. J. Buchhorn. Magdeburg, 1811. Buchhorn was the first to give the name of Keratonyxis, or Punctio Corneæ, to this method of operating.

† We do not know if the above sketch of the history of division through the cornea will possess much interest for English readers. The English public appears very well satisfied to be duped by practitioners in self-panegyric and surreptitious discoveries. One of the pretended improvements which have lately been pretty successfully palmed upon them, is the cure, by excision with the knife, of the sarcomatous state of the lining membrane of the eyelids, described by the Greek writers under the name of Pladarotis, and by old English surgeons under the expressive appellation of the Mulberry-eyelid, and which is so apt to remain after ophthalmoblenorrhœa or Egyptian ophthalmia, a disease better known to the ancient Greeks from their frequent intercourse with Egypt, than it has ever been to the surgeons of this country. Read, in 1706, recommended the granulations, as they have been improperly called, or enlarged and indurated cryptæ of the conjunctiva, to be removed with a lancet, and then a solution of blue vitriol to be applied to the place. "If they be thick and gross, they must be cut away dextrously with the point of a launcet, and afterward let the place be touched with a little fine salt, alum, or copperas-water." Short but Exact Account of all the Diseases incident to the Eyes. 2d edition, London, 1706. Page 96. How old Read would stare, could he lift his head from the grave, and hear of the new discovery!

‡ Richter had adopted a very favourable opinion of the operation of Conradi. "Venerandus Richter ille noster inquit: ubi cataractam fluidam esse certo com-

lished the first results of his practice in the tract now before us. This operation is also the subject of one of the four Essays contained in the first volume of Dr. Reisinger's *Beyträge.*

We can scarcely believe that so much depends upon the form of the instrument with which this operation is performed as our German brethren are inclined to think. Of course the needle, whether straight or slightly bent, must be very sharp on both sides; and it ought to become round-necked at about a line and a half from its point, so that it may be turned in different directions after its cutting part has reached the capsule. A needle which is flat or chisel-shaped from its point to its handle, is not fit for this operation, as it can be used in dividing the capsule and lens only in the direction in which its cutting edges were passed through the cornea. Professor Langenbeck prefers a very small two-edged needle, slightly bent.

Without the use of belladonna or some similar narcotic, division through the cornea cannot be performed. Indeed it has been only through the aid of these substances in dilating the pupil, that this operation has been brought to its present degree of perfection. Neither belladonna nor hyosciamus, the two narcotics commonly employed, appear to act at all on the retina, but only on the ciliary or iridal nerves as they pass through the annulus gangliformis, so that they may be employed without dread. We have even seen these substances continued in certain cases of opacity of the cornea, for more than a year, without at all affecting the retina. Belladonna is to be preferred to hyosciamus, as it dilates the pupil more completely. In cases where hyosciamus has been found scarcely to widen the pupil at all, belladonna has produced a great degree of dilatation. The wider the pupil, the more easily and completely will the division be executed. It has also been found that the pupil dilated by hyosciamus narrows itself during the operation, whereas the plentiful application of belladonna renders the iris perfectly motionless. The action of hyosciamus lasts from five to six hours only; that of belladonna extends to twenty-four hours. The continuation of the dilatation has considerable influence in preventing iritis, and favours both the distribution of the fragments of the cataract in the aqueous humour, and their solution. The belladonna is to be used as already directed at page 397. Care must be taken that the extract be good and

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perimus, operationem facile simpliciorem faciemus acu per corneam et pupillam adacta, capsulam patefaciendo, quo illa profundatur." Friedericus Jaeger de Keratonyxidis Usu. Viennæ, 1812, pag. 18.

recently prepared, as that which has been kept for some time frequently does not act at all on the iris. Some hours before proceeding to the operation, the extract to be used ought to be tried on a healthy eye.

The advantages to be derived from a complete dilatation of the pupil in this operation are so considerable, that nothing must be omitted to secure them. 1. We are thus enabled to form a much more satisfactory diagnosis, both with regard to the kind and extent of the opacity, whether merely lenticular, or capsulo-lenticular, as the whole of the parts concerned in the disease are displayed to our view. 2. We ascertain whether any adhesions exist between the iris and the capsule, or whether any other complication of the disease be present. 3. The wider, and the more motionless the pupil, the less is the possibility of touching the iris, even under unfavourable circumstances, such as the motion of the eye or of the patient's head. 4. We can both move the needle more freely about, when the pupil is completely dilated, and we see also the whole of the operation. 5. Should the cataract be found to be hard, so that it would be improper to attempt its division, we can more easily apply the flat side of the needle to the upper edge and anterior surface of the lens, and thus recline it, without touching the pupillary margin of the iris. 6. When the pupil is completely dilated, we can more easily judge if the cataract be deeply enough reclined. 7. If there be capsular opacity present, it can with greater certainty, and in its whole extent, be removed from the axis of vision. 8. The soft lens can be more easily divided, and more of the fragments conducted with the flat side of the needle into the anterior chamber. 9. Any points of adhesion between the iris and capsule can be more conveniently cut across. 10. The fragments of the cataract do not irritate the iris so much after the operation is finished, and thus iritis is less liable to occur.

In order to secure the continuance of certain of these advantages, Dr. Reisinger recommends the filtered solution of belladonna made lukewarm to be dropped daily, for several days after the operation, into the inner corner of the eye, while the patient opens his eye a little, so as to allow the solution to spread over the conjunctiva. The solution ought to be filtered immediately before using it, as the saline particles which extract of belladonna, like all other extracts, contains, having formed small crystals in the solution, are apt to irritate the surface of the eyeball. This continued use of belladonna after the operation is particularly to be recommended in gouty patients, and in cases where iritis is apprehended.

Professor Beer and Professor Langenbeck differ very materially in their practice with regard to the point at which they enter the needle through the cornea; Professor Beer doing this through the temporal side of the cornea, about the eighth of an inch from the edge of the sclerotica; whereas Professor Langenbeck passes the needle about the same distance from the sclerotica, but through the inferior side of the cornea. Professor Beer indeed does not absolutely condemn the latter situation. * Professor Langenbeck thinks it possesses considerable advantages. 1. If the inferior side of the cornea be selected, the right eye may be operated on with the right hand. 2. If reclination be found necessary from the hardness of the cataract, this is much more easily performed by the needle introduced inferiorly than laterally. 3. In entering the needle into the cornea, the instrument may be supported on the nail of the index finger of the left hand, which at the same time depresses the lower eyelid, till it has fairly entered the anterior chamber, which is no small advantage for an inexperienced operator. 4. The eye is much more completely fixed by the needle introduced under the centre of the cornea than if the same instrument were introduced laterally, especially as the eyeball has a much greater tendency to turn itself towards the nose than towards the temple, when it is threatened by the needle. We are ready to grant, on the other hand, that the fragments of the divided lens are more easily conducted into the anterior chamber by the needle introduced through the temporal side, than by the same instrument passed through the lower part of the cornea.

The operation of division through the cornea divides itself into three periods. The *first* is the entering of the needle through the cornea and through the dilated pupil. The *second* consists in the division, or rather the annihilation of the central portion of the anterior hemisphere of the capsule. The *third* consists in the division of the lens, and the bringing of its fragments into the anterior chamber. Each of these three periods must be carefully distinguished by the surgeon, and executed according to certain rules, into the details of which we cannot at present enter, having designed this article as a comparative view of the advantages and disadvantages of the different operations for cataract, rather than a description of their manipulations. We shall only add therefore, what indeed we have already hinted at, that the success of the operation chiefly depends upon

* Leitfaden. 2 Band. Seite 398.

the second period being executed so as to ensure the action of the aqueous humour upon the cataract. This can be effected only by very numerous and small incisions through the anterior hemisphere of the capsule with the point of the needle; a part of the operation which itself will require a minute or two to perform, and which from its minuteness is altogether incompatible with an exhibition of dexterity. We have seen repeated failures of the operation of division through the cornea from the imperfect destruction of the anterior hemisphere of the capsule, the operators supposing that a crucial incision through that membrane was all that was necessary, while it ought in fact to be cut down into almost imperceptible shreds, if it is meant that the operation should be successful on its first performance. Through the extensive central opening of the capsule which is thus formed, the fragments of divided lens are brought forwards with ease by means of the flat side of the needle, and even on the needle being withdrawn, they advance still more completely into the anterior chamber, especially if the aqueous humour be now discharged through the wound of the cornea.

We have already spoken in general of the advantages of operating through the cornea in preference to wounding the sclerotica and choroidea. Experience, in the hands not only of Professor Langenbeck, but also of Professor Walther of Landshut, and of many other of the most distinguished surgeons of Germany, has confirmed the opinion which, on the known principles of the anatomy and physiology of the eye, had been formed *a priori* of the operation of division through the cornea, by Dr. Buchhorn; namely, that this is the least dangerous of all the operations which have been proposed for the cure of cataract. At the same time, this operation is not suited to all the varieties of this disease. The very name, division, by which we have designated this operation, implies that the cure of such cataracts only as are of a consistence which allows them to be cut up, is to be attempted in this method.

Before leaving this part of our subject, we shall enumerate a few of the most striking advantages of division through the cornea.

1. This is, in regard to mechanical execution, the least difficult of all the operations for cataract. On this account, it particularly recommends itself to the young practitioner, and to him who has not operated much on the eye. The operator's attention is not divided, as in the operation of extraction, among a number of difficulties; but with a single and easily managed instrument, he has a series of very simple manipulations to

execute. On the same account, this operation must appear less terrible to the patient.

2. This operation is almost completely devoid of pain. The patients are often observed to be unconscious that the needle has already begun to operate within the eye. This advantage of division through the cornea is productive of another of much importance; namely, a greater degree of rest in the eye than can be obtained in any other mode of operating, which permits the whole manipulations to be much more easily and satisfactorily performed. Division through the cornea is particularly to be recommended when children are to be operated on, as they are very liable to be convulsed in consequence of the pain caused by the entrance of the needle through the sclerotica. Experiments upon the inferior animals show very distinctly the great difference between wounding the cornea and penetrating through all the tunics of the eye. They allow a considerable section of the cornea to be made without manifesting any signs of pain, while the mere passage of a needle into the eye behind the cornea, evidently causes them severe suffering, which they express by cries and violent attempts to escape.

3. A striking advantage possessed by the operation of division through the cornea, over division through the sclerotica, is the certainty with which the anterior hemisphere of the capsule is broken down and destroyed. The second period of division through the cornea is dedicated entirely to the annihilation of the anterior hemisphere of the capsule, a most important object of the operation, but which, in division through the sclerotica, is left almost entirely to chance, and in general is scarcely in any degree effected. In operating through the sclerotica, the needle is exceedingly apt to enter the substance of the lens from the side, or to shove it a little towards the nose, getting between it and the anterior hemisphere of the capsule, and thus the lens is divided before the anterior hemisphere of the capsule be opened. Even when the needle passes at first between the anterior hemisphere of the capsule and the iris, that part of the capsule is divided into two halves by the first stroke backwards of the needle, the edges of the incision immediately separate, the two halves become relaxed, and if we attempt a more complete division, they slip from before the cutting edge of the needle. Hence it is, that secondary capsular cataract so frequently follows division through the sclerotica, the two or three floating flaps of the capsule becoming opake and reuniting.

4 An advantage of no small importance attached to division

through the cornea is, that in this manner of operating, the posterior hemisphere of the capsule, its numerous vessels derived from the central artery of the retina, and the vitreous humour are not in the slightest degree injured, but on the contrary are left entirely untouched. Hence it is, that wasting of the eye and amaurosis are scarcely ever found to follow division through the cornea, while they are unfortunately but too frequent consequences of division through the sclerotica.

The minute opacity which is occasionally the consequence of the puncture of the cornea in division, has been mentioned as an objection to this operation. If the instrument employed be of the proper fineness and sharpness, and be used with the necessary delicacy, no opacity whatever will ensue, and even when a slight cloudiness is found to surround the wound on examining the eye three or four days after the operation, this cloudiness speedily disappears, so that no vestige of the puncture remains.

If the cataract be of moderate consistence, the patient properly prepared for the operation, a favourable state of the weather selected, the patient steady, the eye carefully shaded for five days after the operation, the pupil dilated by belladonna during all that time, the body kept as much as possible at rest, and, for some weeks, all unnecessary experiments forborne, there can scarcely be a doubt of a favourable termination of division through the cornea.

There are certain cases of cataract for which the operation of division is totally unfit; namely, those in which the lens is of too firm a consistence to be divided by the needle, or even if divided, the substance of its fragments too dense to be penetrated by the aqueous humour and therein dissolved. Shall we extract such cataracts, then; or ought we to content ourselves with reclining them through the cornea? Comparing Extraction, as it is usually performed, with reclination through the cornea, we do not hesitate to pronounce the latter the preferable operation. In England especially, extraction is but too often performed in a rude, clumsy, and careless manner; as if our precious oculists thought it beneath them to shun the avoidable dangers of that severe operation, or to lessen those which, in part at least, cannot be set aside. Our readers are not to be told how often extraction terminates in disorganizing inflammation, suppuration, and wasting of the eye. Even when sight is not entirely lost, how frequently is the cicatrice of the cornea so broad as to deform the eye, and greatly to impede vision! How frequently does protrusion of the iris take place, produc-

ing permanent distortion of the pupil! How often, the hyaloid membrane giving way, is so much of the vitreous humour discharged, that after the patient has recovered from the operation, his vision is very indistinct! How very rarely do we see a case in which the operation of extraction has been perfectly well performed, and from which the recovery also has been perfect!

The chief dangers of extraction are to be found in the great extent of the incision of the cornea, the injury done to the iris during the opening of the capsule, and the admission of the atmospheric air within the aqueous chambers.

The first of these three causes cannot be set aside. The incision of the cornea must comprehend the half of its circumference, to admit of the easy exit of the cataract. Much may be done, however, to lessen the dangers of this large incision, by the skilful employment of a proper instrument, and by closing with due attention the lips of the wound. The triangular knife of Professor Beer will be found the most perfect of all the cataract-knives which have been invented. The whole incision is accomplished by the progressive motion of this instrument towards the nose. To close the lips of the incision, the patient ought to look upwards, by means of which motion the upper eyelid brings the edges into accurate apposition, which is scarcely ever effected by the lower eyelid, while the patient looks straight forwards.

The second period of extraction consists in the opening of the capsule. To the mode of performing this part of the operation usually followed in England, there are two very material objections. The first is, that the opening of the capsule is imperfectly performed. A pointed and curved needle is used for this purpose, and a single scratch, or at most a few irregular scratches are made through the anterior hemisphere of the capsule. The flaps into which that membrane is thus divided are left in the eye, and on the slightest degree of iritis supervening to the operation, these flaps become opake, reunite, and thus form a secondary capsular cataract. In order to perform this part of the operation in a sufficient manner, a needle like that for division ought to be employed, and with the cutting edge of this instrument the anterior hemisphere of the capsule ought to be accurately divided by three or four incisions, nearly perpendicular, crossed by as many in an oblique direction; so that the anterior hemisphere of the capsule may be divided into a considerable number of minute lozenge-shaped shreds. These being totally separate from each other, and from the circumference of the capsule, make their exit on the surface of the lens, or along with the aqueous humour; and even should they

remain within the eye, they never can unite to form a secondary cataract.

The second objection to the manner usually followed of opening the capsule is, that it is done when the pupil is contracted. This state of the pupil both hinders so complete a division of the capsule as ought to be executed, and renders it almost impossible to perform even an imperfect division without bruising the iris with the instrument which is employed. We may add to this, that the exit of the lens is usually permitted to take place during the same contracted state of the pupil, from the patient's being exposed to the same degree of light which was admitted into the room, when the section of the cornea was made; whence the iris is necessarily bruised by the lens, as it advances through the resisting pupil. The latter part of this objection may be in some measure avoided, by moderating the light to which the patient is exposed during the third period of the operation. But to obviate the first part of this objection, as well as the third objection, namely, the admission of the atmospheric air into the eye in the same period, Dr. Wenzl proposes to practice extraction in the following manner:—

The pupil being dilated by belladonna, the needle for division is to be passed through the cornea, and such a division of the anterior hemisphere of the capsule performed, as constitutes the second period of the operation of division through the cornea. Favoured by the dilatation of the pupil, the division of the capsule will be executed in this manner to its complete extent, and without any risk of injuring the iris; whence the dangers of secondary cataract and of iritis will be greatly lessened. On the following day, the pupil having contracted to its natural size, the incision of the cornea is to be performed in the usual manner. Then moderating the light to which the eye is exposed, the same gentle degree of pressure is to be made upon the lower part of the eyeball, which is exercised during the third period of the operation, as usually performed. Under this pressure, the cataract will advance through the pupil, and make its exit through the cornea. In this method of operating, the lifting of the flap of the cornea, and consequent admission of the atmospheric air into the aqueous chambers, which take place in the second period of the ordinary operation, are avoided.

The performance of one part of the operation one day, and the remainder next day, is an objection to this method of extraction, which has not escaped its author. Dr. Wenzl adds to his account of the operation, that he does not see why the whole steps of the operation might not be executed in immediate suc-

cession, in the order already explained. It has generally been urged, indeed, against the use of belladonna in extraction, that the edge of the dilated pupil is brought opposite to the lips of the wound of the cornea, whence an adhesion is apt to form between these different parts. If the observation, however, of Dr. Himly, be correct, that the pupillary edge of the iris is drawn backwards during dilatation of the pupil, and we have no reason to doubt its accuracy, an adhesion between the cornea and iris is certainly not likely to take place, especially if the pupil be kept dilated by the continued use of belladonna till the section of the cornea has fairly united.

Dr. Wenzl has evidently studied the comparative advantages and disadvantages of the different operations for cataract with much attention, and communicates, in the work before us, several useful hints regarding the means of lessening the dangers of each. He suggests, for instance, that no attempts should ever be made to fish out with the curette those portions of a scabrous lens which are apt to remain in the eye after the body of the lens has made its exit; and that no experiments ought to be made to ascertain the degree of vision of the eye which has just been operated on.

Our readers are already aware of our respect for the ophthalmologists of Germany, men who regard the objects of their peculiar study with all that enthusiasm which is necessary for success, and yet with calm and clear perception. We particularly recommend the three publications, of which we have given the titles at the head of this article. To those of Drs. Reisinger and Wenzl, we shall again direct our readers' attention.

The conclusions to which we are at present led are these; that each of the three methods of operating for cataract of which we have particularly spoken, has its peculiar advantages and its peculiar dangers—that these can be appreciated only by those who are intimately acquainted with the anatomy and physiology of the eye—that division through the cornea is the least dangerous operation—that after it come extraction and reclination through the cornea—and that division through the sclerotica and depression ought scarcely ever to be practised, if they be not entirely laid aside. The first question, then, which the surgeon will put to himself, when he is called to deliberate upon the choice of an operation for cataract, will be—Is this a proper case for division through the cornea, or must I venture the operation of extraction, or ought I to content myself with performing reclination through the cornea? This, we think, is the order in which these three operations ought to be placed, in regard to their degrees of danger: division through the scle-

rotica and depression being attended with still more unavoidable disadvantages and more formidable dangers, than either of the three former.

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Art. V. *Codex Medicamentarius, sive Pharmacopœia Gallica, jussu Regis optimi, et ex mandato summi rerum internarum administri, editus a Facultate Medica Parisiensi, Anno* 1818. Paris, Hacquart.

A considerable interval of time having elapsed since the publication of the immediately preceding edition of the Paris Pharmacopœia, the announcement of this edition excited considerable expectation, not more from the length of time which had been devoted to its compilation, than from the number and celebrity of the persons employed in the undertaking; for among others of scarcely inferior note, we find Jussieu, Vauquelin, Hallé, and La Grange, contributing by their labours to its perfection, and by their names to its celebrity. It is reported, that the French Government expended a considerable sum in the remuneration of the individuals employed, and as if that the magnitude of the work should keep pace withthe actual expence incurred, it is protracted beyond 600 quarto pages, containing, to use the words of the prefacer, "Quasi Pharmacopœiæ universalis Specimen."

It is divided into ten sections, each of which is subdivided into a number of heads or articles:—

1. Preparationes Medicamentorum Simplicium et Cautelæ Pharmaceuticæ.—This contains the heads—Delectus, Exsiccatio, Asservatio, et Renovatio, Purgatio et Mundatio, Dispositio et Aptatio, in Pulverem Resolutio.
2. Materiæ e simplicibus integris elementis purum immutatis depromptæ—Such as Succi expressi, Fæculæ, Olea expressa pulpæ, Serum lactis.
3. Materiæ e simplicibus fermentando evolutæ.—This section contains only one article, Vinum ex hydromelite.
4. Materiæ e simplicibus distillando evolutæ—as, Aquæ stillatæ, Olea volatilia odorata, Alcool et Alcoolata, Sales et Olea volatilia pyrogenæa.
5. Solutiones Medicamentorum variis liquidis paratæ.—Under this are as many articles as there are liquids employed as vehicles—for instance, Solutiones paratæ cum Aqua, Vino, Cerevisia, Aceto, Oleis, Alcoole, Æthere, Varii Liquidis cum Saccharo aut Melle.

6. Materiæ e solutionibus inspissando extractæ—as, Mucagines, Gelatinæ, Extracta Resinæ.
7. Medicamenta per Analysim Chemicam e corporibus elicita—these are, Acida, Alkalia, Subcarbonates-Alkalini, Metalla, Oxyda Metallica, Sulphur, Phosphorus, Carbones.
8. Medicamenta per synthesim ex unitis per chemicam affinitatem elementis composita. These are, Ætheres, Acida alcoolisata, Sales, Sulphureta, Sapones, Aquæ Minerales arte factæ.
9. Medicamenta ex mistis tantum simplicibus ad usum præcipue internum—Species, Pulveres compositi, Massæ molliores, Conservæ, Tabellæ, Electuaria et Opiata, Pilulæ, Boli.
10. Medicamenta mistione aut forma ad usum externum præcipue destinata—Cataplasmata, Fomenta, Collyria, Linimenta cerata, Adipes medicati, Unguenta oleoso-resinata, Unguenta solida et Emplastra, Telæ medicatæ et cereoli, Glandes suppositoriæ, Escharotica et Catheretica, Suffumigationes.

To a good division, one of the chief requisites is, that the parts be distinct, a law which we do not think has been observed in this instance; for a great part of the fourth is contained, or at least, according to the title of the section, *can be* contained in the second. It is evident, for example, that the odorous particles of a plant, the volatile oil, may be extracted, in general, with as little or even less change of structure, either mechanical or chemical in the subject, as expressed oils or other substances, which are placed under the second section. It appears also, that a very sound objection may be urged against the title of the fourth section; namely, the inference it conveys, that the process of distillation performs the same part in all the preparations contained in that section—an assertion which is not likely to be granted by any one who considers that the distillation of alcohol, &c. is nothing more than a separating process, while in cases of pyrogénous salts and oils, a real chemical action and new arrangement of particles take place. The third section, containing but one article, seems unworthy of a place as a distinct section. In the present state of chemical science, we should have expected that the term Solutiones, occurring in the title of the fifth section, should not have been employed in so vague a sense; for, under that head are contained compounds which are mere mechanical mixtures or suspensions, and certainly ought not to be named solutions.

To the body of the work is prefixed a catalogue of Materia Medica, together with tables of weights, specific gravities, and

temperatures. In the catalogue, the substances are divided into the mineral, the vegetable, and the animal kingdoms. Under each of these, the articles are arranged in alphabetical order, the nomenclature seems to be conducted with great care, and the names are derived from the botanical, zoological, and mineralogical works of the greatest estimation. Nor do the compilers confine themselves to one name for an article, but add also the synonyms from the best authors, annexing the name of the writer from whom they have borrowed them. This we conceive a most useful precaution, since many substances of high medicinal importance are differently named by different authors, a circumstance which tends no doubt to endanger the distinctness and order which ought to prevail in matters of so much consequence.

Amongst the changes which have been made in the nomenclature, and which are entitled to our utmost deference when we reflect upon the pretensions of the individual who may be considered as more particularly presiding over the Botanical part of the work, we recognize the revival of some of the old epithets which had fallen into disuse. The name *Conium Maculatum*, which has, in our Pharmacopœia, for some time superseded the familiar term *Cicuta*, is by the authority of Jussieu deposed, and the latter name restored; so also the *Anthemis Nobilis* has resigned its pretensions, and the vulgar term *Chamæmelum* is reinstated in its rights.* The part of the plant which is officinal is in many instances noticed, and characters are superadded, by which the genuineness and purity of the substances forming the Materia Medica may be ascertained.

The first thing which strikes us in this list, is the great diminution which has taken place in that branch of it which is derived from the animal and mineral kingdoms. Instead of all those numerous specimens of minerals and precious stones, which (if we suppose the directions of the former edition of the Codex to have been observed) converted the shop of the apothecary into a museum of the mineralogist, we can now scarcely discover any thing the utility of which is not universally acknowledged, and we find very few articles which are not admitted into the British officinal lists; gold, bismuth, and caustic soda are among the exceptions. Prussiate of mercury is amongst those which are admitted into the Parisian

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* The species of Aconitum used in these countries retains the name "Napellus" by the sanction of the same authority, though some have supposed that it is the Aconitum Neomentanum which has always been intended.

Codex, though as yet excluded from the Pharmacopœiae of these countries. In the animal division, the retrenchment, though not so perfect, is nevertheless deserving of commendation; for although we still meet in the new list a few articles which have long since been rejected from the British Pharmacopœiae, yet their number is so small, and the prejudices of the vulgar in favour of old remedies so strong, that it is difficult to condemn the caution which has led to their retention, although, to say the truth, they seem better adapted to the "carte" of the "restaurateur," than to the officinial list of the apothecary, upon whose hands it appears to us that the compilers have already heaped a sufficient share of labour without monopolizing to him the preparation of several articles which ought to be regarded as culinary. For instance, minute directions are given for preparing broths from different animals, such as crabs, chickens, turtle, veal, frogs, snails, &c.—directions which might with greater propriety find a place in the "Housewife's Recipe Book," than in the Codex Medicamentarius.

We are happy to observe that, in excluding the articles Oniscus, Ostrœa, and some others, the compilers of the latest editions of the London Pharmacopœia have put nearly the finishing hand to its complete reformation. We wish those of the Codex had followed their example.

We should have expected that this reformation, or exclusion, would have been extended to the vegetable list, but the very reverse we find to be the case. Instead of having in the slightest degree endeavoured to curtail that formidable list—instead of having thought it worth their while to conform to the opinions entertained by the Colleges of Physicians in these countries, who, daring to shake off the trammels of custom, have not hesitated to disencumber their Pharmacopœiæ of those substances to which the ages of ignorance and superstition had attributed effects scarcely less than miraculous, they have actually increased the number of vegetable articles far beyond what it was in the preceding Codex, including in it many which are either totally inactive, or certainly have no just claim for admission. Not content with introducing many plants of different genera, they have either retained, or in many instances have introduced, numerous different species of the same genus, which, from their similarity of nature, ought to have been dispensed with. Thus we find that the materia medica of the Codex includes no less than fifteen species of artemisia, ten of rumex, ten of euphorbia, nine of mentha, eight of lichen, eight of teucrium, six of rosa, six of geranium, six of achillæa, five of aristolochia, five of quercus, five of chenopodium, five of bras-

gica, five or six of veronica, with so many species, that to enumerate them all would occupy more time and labour than most of the articles are worth. It is in this manner they have spun out their vegetable materia medica to an extent four times greater than the extent of the British lists.

For this they have offered two plausible, yet, in our opinion, inadequate reasons. They say they have retained or introduced all these substances, first, in order that they who read the works of ancient or foreign authors, may be acquainted with the remedies to which such writers allude; and secondly, because the estimation of some medicines undergoes a temporary fluctuation; therefore, in omitting any of those which at present are little valued, they would leave out of their catalogue remedies which may, in a very short time, attain a deserved celebrity.

The first of these is an argument for noticing such substances in a commentary on materia medica, but by no means a reason for introducing them into the number of those which are to be considered as bearing the stamp of approbation, and which the apothecary is required to have at hand, and that perhaps at no inconsiderable expense.

To the second it may be answered, that we do not object to the retention of those substances which have at any time been considered as having a fair claim to notice, or of those the efficacy of which is at present doubtful, upon which experience has not yet finally placed the seal, and concerning the qualities of which "adhuc sub judice lis est." They may quiet their fears as to the fate of such medicines, by the reflection, that where they are really of intrinsic value, they will not be forgotten, even though not at present to be found in a list of materia medica.

By increasing the number of simples to the enormous extent to which it has stretched in the Codex, what do we but increase the temptation to violate the rules laid down, or to adulterate those substances which it ought to be our greatest care to preserve in a state of purity? In justice to the exertions of the compilers, we must give them credit for the complete attainment of the end which they proposed to themselves, when they determined (to use their own words,) "superfluitatem maluimus quam inopiam."

While we deprecate the introduction, or retention, of many of the articles which are to be met with in the pages of the Codex, we are nevertheless willing to acknowledge that several others are to be found, which, though not at present admitted into the Pharmacopœiæ of these countries, are really of consequence. The authors, have, in an appendix to the work, inserted those very active remedies which the improvements

lately made in chemistry, particularly the vegetable branch of it, have placed in our hands. We allude to morphina, and hydrocianic (formerly prussic) acid. These medicines, though of a nature so active as perhaps to be considered scarcely admissible in medicine, are yet so far entitled to consideration, from the celebrity of the practitioners who have advised their exhibition, that we cannot blame their introduction into the Pharmacopœia, although perhaps it might have been wiser to have deferred it until their claims should have been more fully established. We perceive that they have likewise retained the very active drug, nox vomica, together with two other species of strychnos, the S. Ignatii, which is the ignatia amara of Linnæus, and yields the article known under the title of St. Ignatius's bean, an agent scarcely inferior to the former in activity. The third is the strychnos colubrina.

They direct three species of veratrum and four of helleborus, two of which, the h. niger and the h. fœtidus, have a place in British Pharmacopœiæ; the others are the h. viridis and the h. orientalis: the latter is the hellebore of the ancients, and is to be considered as a revived article, as we do not find it in the preceding Codex.

They admit five species of Cinchona, as furnishing the different kinds of Peruvian bark used in medicine. The 1. Cinchona officinalis; 2. Cinchona ovalifolia; 3. Cinchona lancifolia; 4. Cinchona cordifolia; and Cinchona oblongifolia. The specific names of all except the first are taken from Mutis. The three latter are those recognized in the London Pharmacopœia as officinal species, the third affording the variety known by the name of pale bark, the fourth yielding the yellow, and the fifth the red. It is probable that the five species are indiscriminately used; the first (officinalis) seems to be the source of quill bark.

The cinchona caribaea of the Edinburgh list is synonymous with the exostema caribaea of the Codex, a title which it has borrowed from M. Bonpland. The compilers pronounce with great confidence on the true source of the ipecacuan used in medicine: their opinion, since it somewhat differs from that which is entertained by some writers, we shall here offer. According to them there are to be met with in pharmacy, three kinds of ipecacuan. One of these is, however, of comparatively rare occurrence: the two others are not (though differing in colour) derived from different plants, they are nothing more than varieties of the same root—the root of the cephaelis of Brazil, the callicocca of Brotero. The agree therefore with all the British Pharmacopœiæ in the source to which they attribute the article, but they differ from those writers who, resting pro-

bably on the authority of Mutis, declare these two roots to be of different species, or at least to be inhabitants of different countries. The third and less used species they derive from the psychotria emetica. Of this they give the following description :—Its root (the officinal part) is thicker than that of the cephaelis; it is smooth externally, while that of the latter is rough; it is not annulated, but every where indented only with circular furrows distant from each other (sulis tantum circinatis, distantibus passim exarata), whereas the root of the cephaelis is divided as it were into short, or rather narrow rings by numerous transverse fissures (fissuris numerosis transversis quasi in annulos breves secto); so that, say they, there is always this difference between ipecacuan, whether light or dark coloured, from the cephaelis and from the psychotria, that the former is annulated, the latter is not.

It must be confessed that the terms in which the descriptions are couched, do not appear sufficiently precise to convey this idea. In order rightly to understand the difference between them it is necessary to hold in mind the opposition between the terms, "fissuris" and "sulis tantum;" by the former are intended profound, and by the latter superficial divisions. There is a fourth kind of ipecacuan mentioned in the Codex, which, on account of its inactivity, is very rarely applied to medical purposes; it is called, on account of its colour, white ipecacuan, and is derived from the ionidium ipecacuanha, which is synonymous with the viola ipecacuanha of the younger Linnæus. The piper cubeba, a remedy which has lately attained some character in the treatment of gonorrhœa, is admitted into the Codex.

Among the resins, balsams, gums, and gum-resins, we find some in this work which we do not meet with in the British Pharmacopœiæ; for instance, among the resins, lac from the croton lacciferum, chibon from the bursera guttæfera, ladanum from the cistus creticus, the tacamacha from the tagura octandra, the resin of the hymenæa conbaril, caout-chouc (elasctic gum as it is improperly called) from the siphonia cahucha, and copal from the vateria indica of Linnæus, the elaocarpus copalliferus of Wildenow.

Among the balsams are the balsamum mariæ seu viride from the calophyllum inophyllum, the carpatum from the pinus cembra, and the styrax liquida from the liquidambar styracifluum.

Only one gum appears in the Codex which is not used in these countries; the gum acaju, derived from the cassuvium occidentale, which is identical with the anacardium occidentale of Linnæus.

Among the very few gum-resins which occur in the Codex,

beyond those in the British Pharmacopœiæ, a conspicuous place is held by the articles bdellium and caranna, both of uncertain origin. The authors admit a fourfold origin of the gum-resin aloes: the aloe perfoliata, aloe elongata, aloe spicata, aloe linguiformis. They do not attempt to decide the question, whether the different kinds of aloes, the socotorina, hepatica, and caballina, are the products of different species of aloe, or of one and the same, the difference of their properties depending on the mode of preparation. If we are to credit the Codex, only one of these kinds, the socotorina, is used in medicine; for the caballina is almost entirely banished from the shops, and the hepatic is, to use their own expression, "Usus tantum inter veterinarios," which strikes us with the greater surprise, inasmuch as this very species is in these countries, in many instances, preferred to the more expensive, the socotorina.

It is somewhat extraordinary, that in the next branch of the work the compilers have disdained to be guarded by the vulgar prejudices which they profess to have observed in the former, and, that contemning the ideal difficulties which arise from a change in the metrical system, they have not hesitated to adopt the most approved modes of determining the quantities of bodies; while, however, they retained this object in view, they have not entirely neglected the ancient modes of mensuration, since they refer to the old weights in all their compound formulæ, in addition to the terms of the system which they recommend.

It is well known to our readers, that the weights and measures used in France have within the lapse of few years undergone a total revolution, being now referred to a standard quite different from that formerly used. The compilers have, therefore, with great propriety taken into consideration the necessity of conforming to these changes, but at the same time they have seen the utility of rendering the alteration as slight as possible. Therefore, in the prescription of formulæ, they have determined to make use of general abstract numbers, expressive of the relative quantities of the ingredients; nevertheless, they have by no means neglected the absolute weights, since they have proportioned these numbers so as to represent them according to either system by approximation. Thus, that which at first sight seems so difficult, namely, to reconcile the two systems, we find accomplished in the neatest and most effectual manner, and thus are the formulæ of the Codex adapted not only to the French but to the foreign, not only to the ancient but to the modern modes of mensuration.

For the unit of the scale they have chosen a gramme, because

one dram (of the old system) is equal to 3.82 grammes, that is, it is very nearly equal to 4 grammes; therefore the number 4 represents one dram or four grammes, therefore 1 represents a gramme. An ounce, consisting of eight drams, is expressed by $4 \times 8 = 32$, two ounces by 64, three by 96, and so on until they come to the half pound (eight ounces), when neglecting lesser quantities they retain only round numbers; for instance, the half pound, which ought to be represented by $256 = 8 \times 32$, they express by 250: one pound, which ought to be $512 = 16 \times 32$, they call 500: two pounds, 1000, and so on; and all quantities above the half pound are multiples, not of 32 (the original ounce), but of 250, the half pound: hence it appears, that for every thing above the half dram the general number of the Codex will be greater than the real number representing the grammes contained in the given weight. One dram = 3.82 of a gramme: 20 grains = 1.062. This quantity they represent by the integer 1, therefore here the general number is less than the real, and since the series is carried downwards by a decimal division, consequently it will always continue to be less; an arrangement the more useful, as the medicines which are so minutely divided are of a very active nature, and by these means is obviated the chance of their being, through mistake or ignorance of the accurate value of the terms of the series, prescribed or taken in a dose greater than ordinary. For instance, if it were intended to prescribe any active remedy (suppose digitalis) in a dose of one grain, following the system of the Codex we should direct, digitalis .05; whereas, the real value of one grain is .0531, a decimal evidently superior to .05, therefore we should actually in this case order somewhat less than one grain. The reason of omitting the units after we come to the half pound, is in order to facilitate the calculation; by this step we do not materially affect the relative strength of the compound, since such high weights or measures are generally made use of in directing the quantities of ingredients in what are called by the compilers solutions, where the active substance bears but a small proportion to the whole mixture.

They have annexed two tables, one explaining the value of each of the general numbers, either according to the new or the old methods; the other containing instructions for converting the new into the old weights. 500 grammes, according to this table, are equal to one pound, 2 drams, and 53.57 grains of the ancient system; but by an arrangement of the French government, the value of the pound has lately been altered, and instead of the above-mentioned value, it is settled, that henceforward 500 grammes shall be equal to one pound. Hence, as

the authors observe, a slight difficulty is likely to be thrown in the way of their arrangement. At all events, we must not withhold the applause to which they are justly entitled, from their efforts to reform a system which hitherto has been liable to many objections. In taking specific gravities, they make use of Baume's or the Dutch Areometers, or both, and they conclude this part of the work, by subjoining a table, shewing the absolute weight of a drop of such fluids as are exhibited in doses of a certain number of drops, or a spoonful. This table likewise shews the weight of a handful or pinch of those substances which are accustomed to be measured out according to those standards, with several other particulars, which we have no hesitation in asserting to be highly advantageous or even necessary to the practical pharmaceutist.

The first section of the work, containing the heads above enumerated, viz. *Delectus*, *Exsiccatio*, &c. is one which deserves to form a part of our Pharmacopœiæ, for much of the virtue of vegetables depends on the time of collecting and drying them. The authors of the Codex deserve much credit for having prefixed to the prescriptive formulæ a section containing so much information as is to be found in this short article. The directions given, coincide nearly with the practice adopted in Britain; there are, indeed, one or two exceptions, not, however, of very great consequence. One is, in the case of the roots of annuals, which are with us usually collected in the spring, while the Codex directs that they should not be dug until the autumn. In the article Exsiccatio, an extremely neat method of preserving and drying the petals of violets is given. They are directed to be spread out on a cloth, the calyces, stamina, &c. having previously been removed, warm water is then sprinkled over them and allowed to filter off, whereby it attains a greenish colour. This is to be repeated three or four times, until the water passes through no longer tinged with green, but with a pale blue; the petals are then to be dried like those of other flowers. Violets prepared in this manner are peculiarly adapted for the preparation of the syrup. To the drying of vegetables the French appear exceedingly attentive. We are directed in the Codex, when it may not be in our power to attain this object by the influence of the sun, to perform the operation in a chamber constructed for the purpose. This affords the double advantage of supplying the requisite degree of heat, and of placing it in our power to exclude the light—a circumstance well worthy of our attention, since there are few vegetable substances, (if any) which are capable of withstanding unchanged, the combined actions of heat and light. The article " In

pulverem resolutio" is exceedingly complete, containing instructions on the mode of pulverising several substances, on which it is either tedious or difficult to perform this operation.

The second section, viz. *Materiæ e simplicibus integris Elementis parum immutates depromptæ*, includes the heads, 1. *Succi expressi.* 2. *Fæcula.* 3. *Olea expressa.* 4. *Pulpæ.* 5. *Serum lactis.* Of the first we find no less than twenty-four instances. The compound juices seem peculiarly qualified to fulfil the object for which they are intended. One of these formulæ, the succi dicti antiscorbutici, contains sysmebrium nasturtium, cochlearia armoracia, et menyanthes trifoliata. These are pounded together, and the juice expressed; the other (they are only two in number,) is succi temperantes et diuretici dicti. This is prepared from the lactuca sativa, rumex acetosa, chærophyllum sativum et sempervium tectorum, treated in the same manner as the former. It is to be feared, that many of the expressed juices are perishable; nevertheless, there are some, which with proper precautions may be kept uninjured for months. The chief direction given for their preservation, is to put the juice into a flask, which is to be filled up to the neck; a stratum of oil of almonds is then poured on the surface. In one instance, that of the succus cydoniæ, we are directed to have recourse to a farther precaution, which is the fumigation with burning sulphur, of the flask destined for the reception of the juice, or to mix with the juice a small quantity of sulphite of lime, in the proportion of about fifteen grains to the quart measure. This appears an excellent form for the exhibition of such vegetable substances as are adapted to it, provided the juice has been recently prepared; yet it must be acknowledged that serious objections may be made against the administration of active substances in this shape, if they have been for any length of time prepared. Is it not to be apprehended, that in this case they may undergo a fundamental alteration, by which their qualities may be either totally destroyed, or so far weakened as to disappoint the expectation of the practitioner? To give an example, the juice of cicuta, by the slightest change of its constituent principles, may be so metamorphosed in its medicinal qualities as to become totally inert. We therefore do not approve of the plan of keeping it for any considerable time, as is directed in the Codex. If it cannot be prepared extemporaneously, it might with advantage be preserved in the form of an inspissated juice. The second article of this section, besides the fæcula alibilis solani tuberosi (an epithet by the bye totally inelegant), contains the fæculæ medicinales radici bryoniæ, radicis ari, radicis iridis, et seminum hypocas-

tani. We expected here to have met with the fæcula of the momordica, or ecballium elaterium, as it is called in the Codex; it occurs, however, under the head of the extracts in the form strictly speaking of an inspissated juice. In the third head of this section, we meet with a rather extraordinary preparation, oleum de vitellis ovorum, procured by evaporating the mixed yolks of eggs to about one half; on subjecting them to pressure, we obtain the oil, which, in order to be had in a state of purity, is to be filtered through paper. The most striking property of this liquid is, that it dissolves ether in almost every proportion. Altogether, from the impossibility of keeping it long, and other circumstances, it appears rather a superfluous article. In this part of the work, directions are given for the preparation of several of the volatile oils by expression, among which are those of orange and lemon peel, of dill, carraway, and aniseeds, &c. This method where it can be practised, is certainly possessed of some advantages over that wherein we make use of heat for the separation of these oils from the substances in which they are contained; the operation is very simple. In order, for example, to procure the volatile oil of orange peel, it is only necessary to separate the rind, and subject it to pressure, the liquor which filters through, divides into two portions, one of which is the oil, the other consists chiefly of water, and is to be separated by the usual process. The term pulpæ of the Codex is not there applied in the same sense in which it is used with us; for it signifies not only what we understand by it, viz. the medullary parts of fruits, but it is also given to what might with greater propriety be termed a *mass*, composed of different ingredients pounded together. Such a composition is the pulpæ de plantibus emollientibus, formed by boiling for a short time in water the species emollientes, and when it is sufficiently soft, pounding it into a mass. The latter compound consists of the recent leaves of altheæ, malva, verbascum senecio et parietaria.

The heads into which the fourth section is divided, are, 1. Aquæ stillatitiæ. 2. Olea volatilia. 3. Alcool et Alcoolata. 4. Olea, et Sales volatilia pyrogenæa. The first head includes a most formidable list; no less than fifty distilled waters are directed; a number of which might undoubtedly be dispensed with, particularly as many of them scarcely differ from each other. The authors direct that in preparing distilled waters from plants sparingly odorous, the operation should be twice or thrice repeated, adding each time to the water which has already passed over, a fresh quantity of the plant, and redistilling the infusion. The propriety of this measure appears

to us doubtful. In the list of these medicaments we discover the distilled waters of laurel leaves, and bitter almonds, preparations of hydrocyanic acid, comparatively weak indeed, but still of a nature so active and dangerous, that we may say of the person who first advised its introduction into medicine,

> "Illi robur et æs triplex
> "Circa pectus erat."

The number of volatile oils in the second article, is less than in the British Pharmacopœiae. Among those which are proper to the Codex, are the olea volatilia de floribus aurantii, ocymi, salviæ, rosarum, tanaceti et thymis. We were rather surprised at not meeting under this head the oleum terebinthinæ. This is an omission which we scarcely deem pardonable. In the preparation of those oils which are heavier than water, we are directed to add to the mixture about to be distilled, about as much sea salt as shall be equal in weight to half the subject. With what view this addition is made we are ignorant. Perhaps it is in order that the oil may float on the surface, and thence pass over before the water.

The third article Alcoolata is synonymous with the spirits of the British Pharmacopœiae; it is divided into two heads, the alcoolata simplicia and the alcoolata composita. The former are only three in number, viz. A. de aurantiorum cortice, A. de cochlearia, et A. de rosmarino. It appears to us, that the authors deserve credit for rejecting from their Codex the long list of spiritus distillati, which are to be found in our Pharmacopœiæ. Their places may frequently be supplied by a tincture prepared from the same subject, which is in most instances directed, as well as the spirit.

Among the compound alcoolata, we may observe that the A. aromaticum ammoniale coincides nearly with the spiritus ammoniæ of the London Pharmacopœia. Both of them yield in elegance to the formulæ of the Edinburgh and Dublin Colleges, and both are as open as the Dublin formula to the objection urged against the latter by the author of the Edinburgh Dispensatory—an objection which appears more subtile than well-founded. The alcoolata de cochleariis is a less complex, but at the same time a less elegant composition, corresponding with the spiritus raphani compositus of the London College; it is less palatable, as not containing any of the aromatics which enter into the latter. A few other compound spirits are annexed, which, though still exceedingly complex, have yet the merit of being much less so than the corresponding formulæ in the preceding edition of the work. In one of these, (the alcoolatum

dictum vulnerarium) we find a retrenchment of no less than twenty-nine articles, the number of ingredients directed in the preceding edition for the preparation of this medicine being forty-two, while, according to the last, they amount only to thirteen, exclusive of the solvent. Had the authors swept away almost eight out of these thirteen, they had furnished a more rational formulæ. These ingredients are, salvia, angelica, tanacetum, artemisia, anethum, menthæ, hysoppus, thymus, anathemis, melissa, origanum vulgare, origanum majorana, melissa lavandula. All these the authors do not consider as absolutely necessary; they have therefore designated by the italic character those which are indispensible, so that the remainder may be omitted, if it be inconvenient to insert them. This is a practice we cannot hesitate to condemn, thinking as we do, that no article in a Pharmacopœia should be compounded according to the arbitrary wish of any individual, or in any other manner than that there prescribed. To permit such a licence, is, in fact, to do away the entire utility to be derived from the use of Pharmacopœiæ—a most material part of which is to ensure uniformity in the several compounds. In the above formula eight of the ingredients are judged unnecessary; in another instance, (the alc. de terebinth. comp.) out of sixteen materials which go to its composition, only four are considered indispensable: in a third, (the alcoolatum carminativum Sylvii) no more than five out of sixteen are noticed as necessary to the preparation. It is evident, that by this procedure, the authors accuse themselves of a neglect of duty in permitting the formulæ of their work to remain in a state of what they themselves consider unnecessary complexity. The two last preparations under this head, viz. the alcoolatum de melissa compositum, sive aqua carmelitarum, and the alcoolatum de citreis compositum, sive aqua colomensis, are more properly adapted to the laboratory of the perfumer than that of the apothecary. Under the fourth article, viz. the olea and sales volatilia pyrogenaea, we are not a little surprised to meet the phosphat of lime, (os dictum cornu cervini). There is manifest abuse of words in applying to this salt the term pyrogenaea.

The fifth section, *Solutiones Medicamentorium variis liquidis paratæ,* is divided into as many subsections as there are liquids used as vehicles for the administration of medicines. The first is *Solutiones aquâ paratæ,* which is divided into three articles, 1. *Potus,* 2. *Misturæ,* and 3. *Jura.* By the first are intended solutions prepared by infusion, decoction, or maceration; by the second, solutions prepared from the ingredients by simple dilution or admixture, unassisted by any of the above processes;

and by the third, solutions obtained by decoction from the flesh of animals, being precisely synonymous with the term broth in the English language. The article Potus is divided into three heads, viz.—1. Ptisanæ, 2. Apozemata, 3. Haustus. The first are generally used as ordinary drink; the apozemata are never intended as an ordinary drink, and they are more saturated with the active principles of drugs than the ptisanæ; the third are usually intended for a single dose, and nearly coincide with the same medicines among us. Among the apozemata, we observe the decoctum kinæ-kinæ, nearly corresponding to our decoctum cinchonæ, except that it is only of half the strength, and contains further an addition of a small quantity of carbonate of potass, by which, as we are informed, a desirable point is gained; for thus the resinous particles which would otherwise have been deposited, are retained in solution; the decoctum guaiaci compositum coincides with the decoctum sarsaparillae compositum of the Dublin College, and differs little from that of the London Pharmacopœia. *Misturæ* are divided into three kinds: 1. Emulsiones, 2. Potiones, 3. Eclegmata. The first term is used in the sense in which we understand it; by potiones are intended those medicines which approach most nearly to what we designate by the term mixtures; and the third is applied to a species of inert liquids, which serve principally for the purpose of bringing to a proper consistence masses intended for the preparation of boluses, &c. In the third article of this sub-section, we find directions for preparing the following juscula:—viperinum, cum cancris fluviatilibus, pullo gallineceo, carne testudinum, carne and pulmone vitulinis, lacertis, ranis, &c. These are all prepared according to one formula, but the jusculum de limacibus is of such peculiar importance, that it has been judged necessary to give a separate prescription for its preparation. At the end of this head is introduced a table, showing the solubility of ether, camphor, and some of the volatile oils.

The *Vina Medicata* is a good article. If we except the vinum opiatum fermentatione paratum, seu laudanum abbatis Rousseau, we shall find nothing contained under it which is not entitled to a place in the Pharmacopœia. We shall insert the formula according to which it is prepared, and put it to the judgment of our readers, whether or not it ought to be retained in use in the present state of chemical and medical knowledge.

Take of white honey, 12 ounces; warm water, 3 pounds: dissolve the honey in the water, pour it into a matrass, and set it aside in a warm place: as soon as it has begun to ferment,

add of good opium, 4 ounces, having previously dissolved (diffused rather) it in 12 ounces of water. Permit them to ferment together for a month, in a place heated to 24° R. (30° Centigrade); then evaporate until ten ounces remain, the liquor having first been filtered; filter again, and add, of alcohol (32 B[e]) $4\frac{1}{2}$ ounces; preserve it in a well-stopped vessel; the ratio of the dissolved portion of the opium to the entire tincture is 1 to $7\frac{1}{4}$.

If we consider that one of the principal objections to the use of wine, as a menstruum for extracting the virtues of plants, is its liability to undergo fermentation, we shall find little reason to approve of the above tincture. We must further reflect on the changes which vegetable substances undergo by fermentation, and on the exceedingly active nature of opium, which causes it to be exhibited in such small doses. If its activity be at all impaired, (which, by undergoing the above process, there is reason to expect,) the ordinary dose will be no longer sufficient, or its efficacy may perhaps be entirely destroyed. From both these considerations this appears to us an improper preparation.

We next come to the *Cerevisiæ Medicatæ*, which are directed to be medicated in two ways, either by adding the medicinal ingredients as soon as the fermentation commences, or by waiting until it has terminated. The same reasons which have led us to condemn the last remedy, induce us to give a preference to the latter mode of preparation. There are no more than two examples of this class of remedies given in the Codex, the first of which, cerevisia de kina-kina, promises to be a valuable article, particularly as from its simplicity it can readily be procured. It is made by digesting, for two days, one ounce of bark in two pints of beer. Perhaps it would be an improvement if the process were conducted on the large scale, since much of the advantage to be expected from the menstruum must be lost by exposure to the air. To obviate this inconvenience, nothing more would be requisite than to introduce the bark into the cask destined to contain the malt liquor; but probably the most effectual plan of imitating this solution would be to add to the beer at the time of using it, as much of the tincture as might be equivalent to the quantity of bark employed for the preparation of the cerevisia medicata.

Under the head of *Olea Medicata* we expected to have found oleum camphoratum (*liniment. camphorat.* of the Codex), linimentum ammoniacale, and one or two other oily or saponaceous preparations, which, however, are ranked under a separate head in another part of the work. This article (olea medicata) contains some useful formulæ, such as the olea cicutæ, strammonii,

solani, nicotianæ, hyosciami; these are all prepared in the same way, namely, by digesting with a gentle heat one part of the subject in two parts of olive oil. That property of fixed oils, whereby they are capable of extracting the narcotic and acrid virtues of some vegetables as well as animals, renders them exceedingly well adapted for such compounds. The oleum de narcoticis is apparently a useful remedy; the name is exceedingly apposite, for there is scarcely a narcotic in the materia medica which does not enter into its composition. It contains strammonium, solanum nigrum, atropa, nicotiana, hyosciamus, and papaver. Had the ingredients been limited to these, it had been better; the twelve remaining appear to us an addition rather than an improvement. A very useful form for the external exhibition of cantharides, is the oleum de cantharidibus, procured by digesting for six hours, with a gentle heat, one part of powdered cantharides in eight of olive oil; the decoction is to be filtered, and is then fit for use. This is evidently a most useful stimulating linament. It is a pity that this otherwise neat and important sub-section should be disgraced by including a formula for oleum de lumbricis vino mediante paratum.

The article Tinctures is prefaced by some judicious remarks, well worthy the attention of the practical pharmaceutist. The authors direct for their preparation a spirit of three different standards, viz. 36, 32, 22, of Beame's areometer. With the first are prepared the resinous tinctures; with the second, those wherein the resinous and extractive, or gummy parts, hold nearly an equal place; and with the third, those wherein the latter predominate. It has been by some authorities contended, that the extracting power of the spirit is increased by the addition of alkaline agents; but that the reverse is true has been ascertained by direct experiment, for which the public are indebted to the compilers; for example, they have satisfied themselves that a smaller quantity of guaiacum is dissolved in spirit of ammonia than in pure alcohol of the same strength; that the quantity of matter dissolved from the root of valerian is the same in both cases; that the addition of subcarbonate of potass to alcohol much diminishes the solvent power of the latter when digested on amber; and that pure potass deprives alcohol of its power of forming a tincture with that substance.

The number of tinctures is very considerable; they are divided into simple and compound. The principal part of the simple are made according to two or three formulæ, a circumstance which greatly facilitates their preparation, and gives an accurate knowledge of their strength, particularly as to several of them is annexed a table of the quantity of matter taken up

from the subject by the spirit. There appears to be a defect in the tincture of opium of the Codex. It is made from the watery extract instead of the substance itself, as is directed by the Edinburgh and London Colleges. The latter appears decidedly the best method of preparing it. In the Irish Pharmacopœia, purified opium is directed to be used in making the tincture. The mode of purifying the opium, is by dissolving it by heat in diluted alcohol, and evaporating to the form of an extract. This extract is not more proper than the substance itself, if selected in a careful manner, and it possesses the disadvantage of being a very expensive substitute. According to the formula of the Codex, one part of the watery extract is contained in twenty-four of the tincture.

The compound tinctures, though not very numerous, are exceedingly complex. One of them contains no less than eighteen ingredients, another sixteen, and so on. Among them we recognize Huxham's celebrated tincture. The tinctura aromatica cum acido sulphurico, approaches to the ether sulphuricus cum alcohole aromaticus, although more complex. The tinctura gentianæ cum ammonia, of which the following is the formula, is a good preparation :—

℞ Radicis gentianæ contusæ unciam unam,...vel...32
Carbonatis ammoniæ drachmas duas,.......vel... 8
Digerantur simul per dies quatuor in alcoolis (22 B^e) libris duabus............vel...1,000

Coletur liquor et exprimatus deinde per chartam trajiciatur.

This tincture may be varied by substituting carbonate of potass or soda for the ammoniacal carbonate. With regard to the extent of this article, though it must be acknowledged that it contains a great number of useless tinctures (principally of the simple kind), yet a superabundance of these medicines is certainly more desirable than a deficiency. A number of etherial tinctures are to be found in the Codex: some of these are obviously improper; for instance, the tinctura æetherea digitalis purpureæ, in which the quantity of matter dissolved is so small (amounting to no more than 1-68th of the tincture) that its effects must always be counteracted by the opposite action of the menstrum (sulphuric ether); unless, indeed, we adopt the opinion of some later writers, who assert that the sedative effects of digitalis are merely secondary, the consequence of a powerful stimulant action in the first instance. The tinctura ætherea alcoolica de muriate ferri, does not seem liable to such objections; it consists of one part of sublimed muriate of iron, digested for eight days in nine parts of ether, in a well stopped flask; the liquid is then to be poured off, and

preserved in small bottles, entirely filled. The tinctura castorei ætherea seems a very proper preparation, as well as those of musk and amber. A curious compound terminates this article, namely, æther phosphoratus, formed by dissolving phosphorus in sulphuric ether, which takes up about 1-152d of its own weight of phosphorus.

The next article of this section is *Syrupi,* which are divided into *simplices* and *compositi,* and each of these into purgantes and non-purgantes. The number of simple syrups is enormous; and this is the only thing to be observed of them; there are upwards of seventy, making, with the oxymels, &c. about one hundred. The syrupus de mercurio mediante gummi seems rather an improper one; it is made by triturating together four parts of mercury, twelve of gum arabic, and sixteen of syrup of poppies (or diacodion). Sulphuret of potass appears also an unfit ingredient for a syrup. The syrup of scammony is very remarkable, chiefly from the mode in which it is prepared, which is as follows:—Half-an-ounce of scammony, four ounces of refined sugar, and eight of alcohol, are heated in a silver dish to a moderate degree; the mixture is then set on fire, and permitted to burn out spontaneously, being frequently stirred during the combustion. The syrup thus prepared is mixed with four ounces of syrup of violets. Eighteen grains of scammony are said to be contained in an ounce of the syrup, but it is difficult to say what change that substance may have undergone during the process.

When we consider the very apposite remarks which accompany the article on distilled waters, we are somewhat disappointed in the directions for the preparation of the syrupi ex aquis stillatitiis. The formula according to which all these are made, is that of syrupus de mentha piperita, and is as follows:—

℞ Summitatum menthæ piperitæ exsiccatarum et
mundatarum unciam unam..........vel.......32
Aquæ ejusdem menthæ stillatitiæ libras duas vel 1,000
Digere balneo maris per horam unam et alteram in vase clauso. Dein cola et per chartam trajice, tunc liquori adde
Sacchari albi duplum et solvatur balneo maris vase clauso. Refrigeratus syrupus per pannum trajiciatur.

One or two objections to this formula occur to us; first, the distilled waters of plants, not sparingly odorous, are found to gain nothing of fragrance by a repetition of the process of distillation; therefore, where is the necessity of digesting a fresh quantity of the plant in its distilled water? Secondly, even supposing the water to imbibe a fresh quantity of the aroma

of the plant, is it not probable that a proportionate loss will be sustained during its digestion; for let us suppose the vessel ever so well closed, still a portion of the volatile part must be disengaged? There is evidently, then, in this process a needless expenditure of time; but it is also uneconomical, since all the plants which are possessed of any of the bitter principle, will, during the digestion, communicate it to the water, which is a perfect solvent for it. Hence a greater proportion of sugar is required than if they were prepared by simply dissolving, in the distilled water, a sufficient quantity of sugar to convert it into a syrup.

The syrupi compositi are of such an amazing complexity, that it would occupy too much time as well as paper to comment on them. The most simple is the syrupus e pulmonibus vitulinis, consisting of *only* seven ingredients, independent of the water and sugar. It is evident, from the frequent occurrence through the Codex of the article which gives its name to this syrup, that it is considered by the Parisian faculty to be an agent of no small importance. In the article mellita there is described a method of purifying honey, which is laborious as well as tedious. It consists in boiling together honey, water, carbonate of lime, whites of eggs, and charcoal. We are informed that this mixture, when strained, affords honey of a very pure quality. There are few of the mellita which have not a corresponding preparation in the British Pharmacopœiæ.

The fifth section is one of too trifling a nature to be worthy of a place in the Codex, more particularly as the compounds it contains can never be kept in readiness for use, but must always be extemporaneously prepared. They are called oleo-sacchara, being, as the name imports, composed of sugar and some oil, which is always of the volatile species.

The sixth section, under which we find the articles—1. Mucagines, 2. Gelatinæ, 3. Extracta, 4. Resinæ, comes next under our view. Of the two first of these little is to be said, except that the first corresponds with our "mucilagines." We have nothing exactly answering to the second, which applies to such solutions, as well vegetable and animal, which, during the process of cooling and inspissation, assume the form of a tremulous mass, to which the term jelly is commonly applied. The third article, *Extracts*, is divided into four heads:—1. Extracta e succis inspissatis, among which the most remarkable are, the extracts of hyosciamus, atropa, cicuta, and aconitum. The London College differs from both the Edinburgh and Dublin, in the directions given for the preparation of the three first of these, the fæculæ being, by the first, retained in the extract,

while in the latter it is not. The question has not yet been completely decided; though, in our opinion, the process of the London College is the most proper. However, it is possible, that, in particular instances, each may have its advantage: be that as it may, the authors of the Codex have adopted a wiser course, for they have, in general, given directions for two extracts from each of these substances, one containing the fæculæ, the other not. In the preparation of the extractum elaterii of the Codex, the deposition of the feculent part is not permitted, but the entire juice is evaporated, so that the extract is like all the former, properly speaking, an inspissated juice. The second species of extracts consists of the extracta ex maceratis infusis et decoctis. Among these we find hard and soft extracts from bark, opium, senna, and rhubarb. Next in order occurs the formula for the preparation of *emetine*, being the one used by Mons. Pelletier, the discoverer of the substance. It is this:—

Take of the Root of ipecacuan, one ounce,
Sulphuric ether, two ounces.

Let the powder be macerated with a gentle heat, for some hours, in a distilling apparatus; let the portion which remains be triturated and boiled in four ounces of alcohol (40 B$^{e}$), having previously been macerated in it; let the liquor filter, and let the remainder be treated with fresh portions of alcohol, as long as it takes up any thing from the root. Mix all the solutions, and evaporate to dryness. Let this alcoholic extract be macerated in cold water (distilled), in order that every thing soluble in that menstrum may be dissolved; filter and evaporate to dryness. This extract is emetine, and is equivalent to about one-sixth or one-seventh of the root. In this state it contains a small quantity of gallic acid, which is too inconsiderable to affect its medical qualities. Under the third head are ranged the extracta e succis concretis mediante aqua aut vino. It commences with four different formula for the preparation of extract of opium. In the first of these, white wine is used as a solvent; in the second, the operation is performed by maceration in cold water, and a careful separation of the sediment and superficial pellicle which are formed on standing. The object—(is it a desirable one?)—to be obtained by this method is, we are informed, that we may be enabled to procure an extract "*omni odore viroso carens.*" In the third, which is the formula of Deyeux, the opium is directed to be macerated in water to which yeast has been added in order to promote fermentation; as soon as the liquor has become clear and limpid, it is to be diluted with water and filtered, then boiled until all

the virous odour has been expelled, after which it is to be evaporated to an extract. After what we have said on the vinum opii fermentatione paratum, it is not necessary to comment on this substance. The fourth formula is that of Diest, the acmé of absurdity. In this it is directed that one part of opium should be digested in four of water at a boiling temperature, for half an hour; the residuum to be treated in like manner, and this decoction to be repeated two or three times; the filtered decoctions are then mixed, and boiled incessantly for *six months*, supplying the waste of water! It is also necessary occasionally to clean the bottom of the vessel, in order to separate the crust which is there deposited. This prescription is a disgrace to the Codex, and we cannot help observing that the authors are the more deserving of censure for introducing it, inasmuch as we may learn, from the words of a note subjoined to it, that they themselves entertain but a poor idea of its importance. They actually defend themselves for admitting it into the list of medicines, by bestowing on it the praise of insignificance: "hanc formulam servavimus ut diu celebrem et cui viri in arte non mediocris auctoritatis peculiarem tribuere amant efficaciam innocentiæque pretium." The extractum myrrhae aqua paratum seems rather an injudicious preparation. Under this article are contained extracta a felle bovino et vitulina. The fourth head contains extracta mediante vino et alcoole adjuvante carbonate potassæ. Of this there is only one instance given, namely, Backer's extract of hellebore. We should have expected that, acting on the result which had been afforded by the experiments on the preparation of tinctures with alkaline solvents, the authors would have omitted this article, and contented themselves with the simple extract without the addition of the carbonate. Among the alcoholic extracts is that of the nux vomica, which is made with a spirit of 22 of Beame: this is, no doubt, a very active remedy. The alcohol is directed to be saved during the process of inspissation, but it is by no means to be appropriated to any use, except the future preparation of this substance, being impregnated with some part of it, and proving, therefore, of a poisonous quality.

The seventh section, *Medicamenta per analysim chymicam e corporibus elicita* contains the following heads: 1. *Acida.* 2. *Alkalia.* 3. *Subcarbonates alkalini, &c.* The acids contained in the Codex which are not received into the Pharmacopœiæ of these countries, are the *sulphurous, nitrous, phosphoric, phosphorous, tartaric, oxalic and hydrocyanic.* The two last have lately considerably attracted the attention of toxicologists. Those which enter into the British Materia Medica are prepared nearly

as with us. Of the alkalia and subcarbonates alkalini there is only one article which is not used among us, while many of those which are contained in our lists are excluded from the Codex. Soda exsiccata and lime are entirely excluded, but there is introduced a solution of caustic soda. The mode of preparing bicarbonate of potass is by passing a current of carbonic acid gas through a solution of the carbonate or subcarbonate. The authors have rejected the neat, elegant, and speedy process of the London College. There are in the Codex three different processes for the preparation of subcarbonate of potass, the first is that in use amongst us, that is, destroying by fire the acid of the supertartrate, and thus converting part of it into carbonic acid, which unites to the base, forming a subcarbonate, since the full carbonate cannot exist at so elevated a temperature. The second process consists in deflagrating the same salt with nitrate of potass, and in this both the acids mutually decompose each other, and one of the products of the decomposition is carbonic acid, which as before unites with the base, and for the same reason forms a subsalt. The third and most expensive is performed by deflagrating nitrate of potass and charcoal. The two last are highly and unnecessarily expensive, for though according to the last, it is impossible that any impurity could creep into the product, yet the carbonate procured by the first is sufficiently pure for all medical purposes; and although it may contain a very small portion of foreign salts, yet they are of such a nature as not probably to be got rid of by the second process.

In the chemical part of the work, besides the old and vulgar names of the different substances, others are attached, adapted to the new nomenclature. For instance, the title of subcarbonate of potass, is subcarbonas potassæ, or according to the new nomenclature, sub-deuto-carbonas potasii. The first part of the name indicates the comparative quantity of acid in the salt, the second that of oxygen contained in the base; the third makes known the acid, and the fourth the basis of the base. Sulphas potassæ is termed deuto-sulphas potassii; sulphas cupri cæruleus is called deuto-sulphas cupri, &c.: and in all the neutral salts, the first part of the quadruple name is omitted, the three latter being generally retained. This rule, however, is by no means so strictly observed as it ought, for in many instances, the second part of the quadruple name is entirely omitted, which might lead to the supposition that a different proportion of oxygen entered into the composition of the bases of salts in many cases in which they are identical. For instance, sulphate of soda is denominated deuto-sulphas sodii, while the phosphate of soda is

called sub-phosphas sodii, an inaccuracy of nomenclature calculated to lead the reader into the double error—first of supposing that in this salt the acid is united with the metal itself and not its oxyde; and secondly, of imagining that it is not a neutral compound. Again, acetate of potass, acetate of soda, subacetate of lead and a variety of others are designated by names compounded of those of the acid, and the metallic basis of the base, no regard being had to the presence or quantity of oxygen. The above are called acetates potassii, sodii, et plumbi. The triple salts are in some cases inaccurately denominated; for this reason, that it often happens that the two substances which act as bases, are not by any means at the same degree of oxydation; as, for example, in the tartaras potassii et stibii, where the new name deuto-tartras potassii et stibii might lead to the conclusion, that in this salt both the metals are at the second degree of oxydation—a conclusion obviously erroneous. The metals and oxydes which are contained in the Codex not found in the British Pharmacopœiæ are, antimony (the regulus), oxyde of bismuth, or, according to the new nomenclature, subnitrate of bismuth, and diaphoretic antimony, consisting of peroxide of antimony (stibic acid), and potass in a state of chemical combination, and prepared by deflagrating metallic antimony with nitrate of potass, and the protoxyde of mercury, which is directed to be prepared by precipitating the oxyde from the protonitrate by means of caustic potass. The same salt is directed to be decomposed by ammonia for the preparation of the mercurius Hahnemanni solubilis, or subprotonitrate of mercury and ammonia; the precipitate obtained in this case is of a much deeper black than when potass is used as a re-agent, which would not be the case were the oxyde alone thrown down. There is reason, therefore, (from this circumstance as well as the known disposition of ammonia to form triple salts,) to acknowledge the propriety of the name, which, according to the new nomenclature, the authors have conferred on this substance. The mode of obtaining metallic mercury free from impurities is highly expensive, as directed in the Codex; it consists in reducing the red oxyde. If the directions for procuring the carbonate of iron from the sulphate by precipitation be complied with, the salt obtained will be, as we conceive, a sub-proto-carbonate, and not as it is called, a sub-deuto-carbonate. It is true there will be a slight admixture of the latter, if the process be performed in the usual way; but if proper precautions are taken, the entire product will be a sub-proto-carbonate. Phosphorus and precipitated sulphur constitute separate articles at the conclusion of this section.

Of the eighth section, *Medicamenta per Synthesim seu ex unitis arte Chemicâ elementis composita.* The first article is ethers. In addition to those in medicinal use in these countries, viz. the sulphuric and nitric, the Codex contains the muriatic and acetic.

The salts are arranged according to the acids they contain. The first class consists of the muriates, chlorurets or hydrochlorates, the muriates of gold and potass, and the hyperoxymuriate of potass are preparations received into the Codex, without having made their way into the materia medica of this country. In order to procure calomel from corrosive sublimate, the Codex directs 480 parts of the latter to be treated with 300 parts of metallic mercury—a quantity manifestly too small; since, in order to convert 480 parts of sublimate into calomel, 356 parts of metallic mercury are requisite. There is, therefore, a waste of very nearly one-sixth of the sublimate employed, because 356:480::300:404.4943 (=404½ nearly); the remainder, therefore, that is 75½ parts of the sublimate, is lost. The proportions directed in the British Pharmacopœiæ are very exact; the quantity of sublimate being to that of the mercury as four to three, or as 480 to 360—as near an approximation as can conveniently be made in round numbers. It is, however, to be observed, that even the small excess of mercury, which in this case contaminates the product, is more difficult to be separated than a slight excess of sublimate. A formula of Jewel for obtaining calomel in a state of minute division is here inserted; it consists in exposing the submuriate in the act of sublimation to the vapour of boiling water. In the preparation of corrosive sublimate, deuto-chloruret of quicksilver by sublimation from muriate of soda, and acidulous sulphate of mercury, an addition of black oxyde of manganese is recommended, in order it should seem, that there may be no deficiency of oxygen, the presence of that agent being absolutely indispensable to the success of the process. The method of obtaining muriate of antimony is neater, though at the same time more expensive, than that of the Edinburgh Pharmacopœia. It consists in distilling a mixture of corrosive sublimate and antimony, in the proportion of eight of the former to three of the latter. A slight inaccuracy, which we are inclined to consider typographical, has crept into the formula for turbith mineral. We are directed to stop the process as soon as the *sulphuric* acid has nearly ceased to come over. If we were to adhere to this rule, the quantity of sub-deuto-sulphate obtained would be small indeed.

The next class of salts is formed by the nitrates, among which

we observe the old sal prunellæ, or nitras potassæ fusus sulphatis pauxillo admixtus; it is prepared by projecting one part of sulphur upon 128 parts of nitrate of potass infusion. It is evident that the substance thus procured, can differ but little from pure nitrate, as far as regards medical purposes; for one part of sulphur decomposes about 6⅔ of nitre, giving rise to about 5½ of sulphate. The entire quantity may therefore be considered unaltered, and the proportion of the sulphate to the entire mass will be that of 5½:128 (more accurately 5½:126 and 5-6ths), or as 1:23.2727, &c.; so that when we consider the dose in which the nitrate is commonly exhibited, we will perceive how totally useless the addition of the sulphate is, since, probably, the quantity administered would never exceed one grain at a time. We doubt the propriety of the term *deuto-nitras liquidus*, as applied to aqua mercurialis, which, from the directions given for its preparation, seems rather the proto-nitrate; it is probably a mixture of both salts, the latter predominating. It is procured, by digesting in a moderate heat, 120 parts of mercury in 150 parts of nitric acid (33g). When the solution is compleated, 900 parts of distilled water are added. These instructions differ from those for the preparation of the substance immediately preceding, (which is a real protonitrate), only in this, that the acid is in the latter case more abundant and of greater strength. With regard to the degree of heat they are precisely similar. We entirely approve of the plan of keeping nitrate of silver in two forms, as directed in the Codex, one in which the salt is regularly crystallized, and the other that commonly used. If the acetate of soda, which the authors have introduced, be found to answer the intention of acetate of potass, it will be a most convenient substitute, since the latter by its extreme deliquescence is very difficult of management.

The most remarkable of the tartrates is, the *tartras acidulus potassæ solubilis admixto acido boracico.* By admixture with this acid, the supertartrate, a very insoluble salt, acquires a most singular degree of solubility. The process is this: 30 parts of boracic acid and 20 parts of distilled water are heated together in a silver dish; as soon as they have attained a moderate degree of temperature, 120 parts of the supertartrate are added in divided portions. The whole liquefies, and by a continuation of the heat is evaporated to dryness, when it assumes the form of a powder, which is to be closely preserved from the contact of the air. At a time when the supertartrate of potass has been ascertained to be possessed of such valuable qualities as a medicine, every thing which tends to facilitate its exhibition, must be eagerly received by the medical world. The process

here given for emetic tartar is rather tedious, requiring, at least, two evaporations; it is prepared from the glass of antimony. Of all the methods directed in the different Pharmacopœiæ, that of the Dublin seems to merit the preference, as well from its neatness and simplicity as from its certainty of success. A tartrate of mercury is directed in the Codex, procured by adding to a solution of protonitrate of mercury supertartrate of potass dissolved in distilled water, as long as a precipitate continues to fall down. A curious tartrate of iron is prescribed in the Codex; it is made by mixing together liquid tartrate of iron and neutral tartrate of potass, and evaporating them to dryness. There occurs in this part of the work a salt of iron, which has not been admitted into the Pharmacopœiæ of this country, we mean the protomelate, prepared by digesting iron filings in the juice of apples not perfectly ripe. This is, perhaps, intended to supply the place of the acetate, which is not among the preparations of the Codex—a circumstance the more extraordinary, as that salt is certainly one of the nicest chalybeates which we possess.

The article on mineral waters is very useful, and we cannot help regretting that such a chapter does not form a part of our Pharmacopœiæ; for, although the use of artificial waters may not prove so serviceable as that of the natural, yet this is to be ascribed to the local circumstances of the latter, not to any real difference between them. If the waters themselves are capable of producing any effect on the constitution, we hold it absurd to say that their perfect imitation should be less efficacious; if the analysis be correct in the first instance, and the synthesis perfect in the second, there is no doubt but the artificial will prove of the same intrinsic value as the natural. The principal of those for which formulæ are inserted, are the waters of Vichy, Seltzer, Sedlitz, Balaruc, Spa, Pyrmont, Bàreges, Aix-la-Chapelle, &c. The following form for the application of sulphuretted hydrogen to the surface of the body, may be worthy the attention of our readers.—*Aqua ad balneum hydrosulphurata.*

℞ Hydrosulphureti sodæ liquidi gradus in areometro
notantis, uncias decem . . . . . . vel . . . . . . 320
Solutionis Salino-gelatinosæ, uncias quatuor . vel. . 128
Misceantur et deinde in balneo paulo ante ingressum agitando et penitus commovendo dissolvantur.

The solutio salino-gelatinosa consists of distilled water, one pound or 500, carbonate of soda, and animal jelly, each one ounce or 32; sulphate and muriate of soda each half an ounce; naptha 20 grains or 1.0. The bath prepared in the above manner, is, of course, not to be administered in metallic vessels.

The ninth section, namely, "*Medicamenta ex mistis tantum simplicibus conflata,*" contains all those mixed masses in which no chemical action is contemplated; such an occurrence, however, is not sufficient to remove any compound from this section. In electuaries, for example, where the ingredients are presented to each other in the state of solution, or approaching to it, it not unfrequently happens that this effect is produced unnoticed, the name given to the resulting mixture not being calculated to excite in our minds the idea of that action.

The first article is "*Species,*" or mixtures of the parts of different vegetable substances in the dry state, either pulverised or not. Since these are preparations unknown here, we shall give an example of the first which occurs, "*Species dictu emollientes.*" ℞ Foliorum malvæ rotundifoliæ althaæ officinalis, verbasci thapsi, lenecionis vulgaris, parietariæ vulgaris, singulorum partes æquales—misce et serva in usum. Such a mixture may be very convenient to have in readiness if we wish to prepare an infusion or decoction of emollient herbs, but it appears of too trifling a nature to be admitted as a distinct preparation, since the ingredients can be mingled together extemporaneously at the time that such infusion or decoction is prescribed. The article pulveres compositi contains some excellent formulæ: the pulvis de senna, scammonio et lignis approaches nearly to the pulvis senna compos. of the London Pharmacopœia, except that it contains a small portion of guaiacum wood and sarsaparilla root. The pulvis de scammonio and jalapæ compos. resembles the pulvis jalap. comp. of the Edinburgh Pharmacopœia, in the proportions in which the jalap and supertartrate are combined in it; but they differ in this, that the quantity of the purgative ingredients is doubled in the former by the addition of the same quantity of scammony as these is of jalap, so that the purgative powers of that medicine are more than twice as great as those of the latter. The formula for Dover's Powder is extracted from Swediaur's Pharmacopœia; it is as follows:—Take of sulphate of potass, nitrate of potass, each four parts; melt them together in a crucible, pour the liquified matter into an iron mortar, and when nearly cold add of dry extract of opium, pulverised, one part, triturate them, and then add of ipecacuan and liquorice root (powdered), each one part. The extract of opium, as well as the ipecacuan, forms 1-11th of the entire powder; the proportion of these two ingredients therefore is somewhat smaller than in P. ipecac. comp. of these countries, but its diaphoretic effects are much greater than those of the latter, on account of the addition of the nitrate of potass.

The authors have neglected a good many of the electuaries

which were found in the preceding edition, and have limited them to a small number (not exceeding eight or nine); as if, however, anxious to throw as many substances as possible into this form, they have made up in complexity for the deficiency in number. The electuaries are of two sorts, the purgantia and the non-purgantia sive alterantia; of the latter species there are only two examples, first the electuarium de croco, consisting of about twelve ingredients: those on which its virtues principally depend are cinnamon, saffron and carbonate of lime; it appears designed for the same purposes as the aromatic confection of the London Pharmacopœia; it is however by no means so warm; the formula in the latter work is much more simple. The second of this kind of electuaries is the elec. de kina-kina, wherein the bark forms about 1-8th of the mixture, one fiftieth of muriate of ammonia is added; the remaining components are honey and syrup of absinthium. This is a good form for the exhibition of the bark, but there are some cases where the tendency of cinchona to produce diarrhoea, will probably be increased by the addition of the other substances. The elect. de rheo compos. contains (among eighteen or nineteen substances), rhubarb and senna, the sum of both mounting to not quite 1-14th of the entire—a proportion evidently too small. The elect. de aloes comp. is made up (strange to say) of only eight ingredients, not one of which are inactive; they are ammoniacum, senna, calomelas, arum, aloe, scammonium, rheum, ferrum. The next preparation we shall notice in this article is the electuarium opiatum polupharmacum, theriaca dictum, and never was an epithet so justly applied as the term polupharmacum to a farrago containing upwards of seventy articles. This "ne plus ultra" of complexity is ushered in by the most solemn assurances that the compilers have not dared to encroach on, or alter in the slightest degree, the directions given in the preceding Codex (60 years since), for the preparation of this "percelebris compositio;" and that, although several of the compound medicines, which formerly entered its composition, have lately been excluded from the pages of the Codex, yet they have taken especial care to introduce every one of the constituents of those compounds in the exact proportion in which they entered the preceding formula; for instance, though the trochisi viperini are no longer in use, yet the caro viperina is carefully preserved as an ingredient of the theriaca. In order to give our readers some idea of the complexity of this formula, suffice it to observe, that the authors have judged it necessary to divide it into thirteen distinct heads, for the purpose of giving us some insight into the nature and action of this monster in

pharmacy. These are, 1. Acria. 2. Amara. 3. Styptica. 4. Aromatica exotica. 5. Aromatica ex indigenis. 6. Aromatica ex umbelliferis. 7. Resinæ et Balsami. 8. Graveolentia. 9. Virosa. 10. Gummosa. 11. Terra inert. 12. Dulcia. 13. Vinum. The amazing complexity of this medicine, the very circumstance on which its celebrity is grounded, is a sufficient cause of condemmnation. How is it possible to suppose that the simultaneous exhibition of agents so opposite, is a desirable object? It will, no doubt, be always a most valuable acquisition to the quack, who, not knowing what intention he should endeavour to fulfil, may reckon with tolerable certainty, that some of the articles of this panacea are adapted to the wants of his patient. We cannot too strongly reprobate the retention of this compound, which has obviously arisen from timidity in the authors, who feared to reject a remedy of which so high an opinion is entertained. But by whom? They themselves answer the question, and confess they have acted according to the wishes of those who are totally unqualified to form an opinion. One of the reasons given for its introduction into the new Codex is, "quia a vulgo sæpius requiritur." A parity of reasoning would lead them to introduce into their Pharmacopœia all the quack medicines, of the composition of which they could attain a knowledge; and, indeed, this intention they have displayed on one or two other occasions. It appears to us, that in assigning the above cause for the retention of certain remedies, they have mistaken their duty, which is no less to decide what medicines ought to be retained or rejected, than to give accurate instructions for the compounding and preparing of such as are judged proper to compose a part of their materia medica. After all the ingredients of the theriaca have been mixed together, secundum artem, they are set aside for one year, in order to undergo a slow fermentation, as it is directed in the Codex. That they do not undergo this process, seems probable from the circumstance that analysis discovers no difference between parcels of theriaca differing much in age, the recent preparation perfectly resembling that which has been of several years standing. Diascordium is another electuary, translated from the old edition to the new Codex, in all its pristine complexity, with the same scrupulous regard to its composition as that we have just been considering. It is only to be wondered how the theriaca cœlestis and the benedicta laxativa, each of them consisting of at least twenty articles, could have so far degenerated as to have forfeited a place in the new edition. The seventh head into which this section has been divided is *Pilulæ*,—a good article, less extensive than we had anticipated. Several of the prescriptions

coincide entirely or nearly with some of those in the Pharmacopœiæ of this country. For instance, the pilula de aloe et myrrha, or Rufus's pill, agrees with that preparation as directed by the London and Edinburgh Colleges, and differs from the Dublin formula only in being composed of socotorine, instead of hepatic aloes; the pilula de aloe et gumbogia contains nearly the same ingredients as the pilula cambogiæ composita of the London Pharmacopœia, but differs from it in this, that previous to the compounding of the mass, the substances are reduced to the form of a vinous extract, which is evaporated to a proper consistence for making pills. The pilula de aloe et sapone of the Codex agrees with the simple aloetic pill of the Edinburgh Pharmacopœia, while the pilula de aloe et fœtidis is, as it were, a compound of the pilula assafœditæ composita of the Edinburgh (or pilula myrrhæ composita of the Dublin), and the pilula ferri composita of the London Pharmacopœia. It is made according to a most excellent formula, from socotorine aloes, senna, assafœtida, galbanum, myrrh, saffron, mace, sulphate of iron, and oil of amber. There is no formula for the reduction of mercury into the state of pills, except one, wherein it is combined with purgatives—an omission, in our opinion, censurable. Backer's pills are here introduced: they consist of extract of black hellebore and extract of myrrh, of each eight parts, and leaves of the carduus benedictus, reduced to powder, three parts. We are sorry, for the credit of the article on pills, to observe the pulvis onisci aselli occurring more than once as an ingredient among its formula.

Of the tenth section we have little to observe, save that it appears very complete. It includes some excellent preparations not yet admitted into our Pharmacopœiæ, among which are to be reckoned the lotio et linimentum ad scabiem, which owe their efficacy to the sulphate of potass. The adeps tartrate stibii medicatus is also a good and useful preparation; so likewise are the adeps muriate hydrargyri corrosivo medicatus, the emplastrum de cicuta, and the emplastrum de mixtis quatuor, compounded of four different plasters, namely, emplastrum saponis, emplastrum cicutæ, emplastrum de gummi kesinis, and emplastrum de hydrargyro compositum.

The body of the work is terminated by an article entirely foreign to the British Pharmacopœiæ—*Suffumigationes*, which contains directions for the production of several fumigations, as well odoriferous as antiseptic, and also instructions as to the capacity of the chambers which a given quantity of materials is capable of perfectly fumigating.

In the Appendix we find formulæ for the preparation of extracta cum fæcula, from cicuta, aconitum, &c. and for the alcoholic extract of nux vomica, the form in which that drug is exhibited in the Hôpital de la Charité for the cure of paralysis. This extract differs from that directed in the body of the work, in being made with an alcohol of 32 Beame, whereas the other is made with one of 22 Beame. The activity of this extract is much greater than that of the extract prepared with the weak spirit. Two methods of procuring morphia are here annexed. The first is that of Robiquet, and is this:—300 parts of pure opium are macerated, during five days, in 1000 parts of water; it is then filtered, and there are added fifteen parts of perfectly pure magnesia, entirely free from acid; the mixture is boiled for ten minutes, and the sediment which forms is separated by the filter, after which it is washed with cold water, until the water passes off clear. It is then treated alternately with hot and cold alcohol, until it ceases to take up any more of the colouring matter, after which it is to be treated with boiling alcohol (32 Beame) for a few minutes. The solution, on cooling, will deposit crystals of morphina; a repetition of the treatment with boiling alcohol will procure a fresh portion of crystals, and the process is to be continued until they cease to be furnished. The second method is that of Sertuernes. The chief difference between them is, that in the latter ammonia is used instead of magnesia, and to the sediment, separated as before, there is added so much sulphuric acid, as is sufficient to convert the morphina into a sulphate, which is decomposed by a further addition of ammonia; the precipitate is dissolved in boiling alcohol, and crystalizes on cooling. This process may be seen at length in the "*Annales de Chimie, Juillet*, 1817." Three processes are given for hydrocyanic acid, the last of which, as the most simple and expeditious, we shall here relate. It was proposed by Mons. Vauquelin, one of the most celebrated chemists of the age, and one of the most distinguished amongst the authors of the Codex:—100 parts of the cyanuret of mercury is dissolved in 800 parts of distilled water: hydrosulphuric acid gas is caused to pass through the solution, so as to precipitate the entire of the mercury; in order to effect which with the greater certainty, the hydrosulphuric acid is to be added in slight excess; it is then filtered, and freed from the superabundant portion of this acid by mixing with the solution somewhat more of the carbonate of lead than is sufficient to saturate it; by frequent agitation, this substance absorbs the whole of the hydrosulphuric acid, and the hydrocyanic acid remains in solu-

tion, of the same specific gravity as that procured by Scheele's method. This acid is generally used in hospital practice, combined with some simple syrup, in the proportion of one part of acid to nine of the syrup. A method of preparing emetic tartar from the subsulphate is here annexed. We are informed that this affords a purer salt than the process directed in the body of the work. Cyanuret, or according to older nomenclature, prussiate of mercury, is also found prescribed in the Appendix. This salt has lately been adopted as an article of materia medica amongst some of the Continental practitioners, who recommend it in the strongest terms. It is, doubtless, a most dangerous remedy, and ought to be exhibited with the greatest caution; nevertheless, it seems worthy of a fair trial. This much we can positively assert, from our own observation, that even long before it was proposed by the Continental authors, we have witnessed the most happy effects from its administration in the treatment of syphilis, where other mercurials had been found to disagree with the constitution.

Having thus conducted our readers through this work, and given them as full a view as in our power of its nature and contents, we shall take our leave with one or two general remarks. When we compare this with the preceding edition, we must at once acknowledge that the authors have done much towards the simplification of pharmacy in France. Had they exerted themselves a little more in the pursuit of that end, their work had been, in our opinion, more perfect. This, however, is a question which appears in different lights to different authorities, and we must not, therefore, presume to decide upon it. The notation throughout that part which contains the prescriptive formulæ seems to us exceedingly improper, the decimal mark being used indiscriminately, as well for the separation of the decimal figures, as for the removal of the figures which stand in the place of thousands. Thus four thousand eight hundred, and four, with the decimal eight hundred, are written precisely in the same manner, (4,800). In the formula for the preparation of syrupus de opio, the proportions are—

| | | |
|---|---|---|
| Opii | - - - - - | 15 |
| Aquæ | - - - - - | 64 |
| Syrupi de saccharo | - - - | 4,800 |

Thus it might appear, that instead of four thousand eight hundred parts of syrup, only four and 4-5ths were directed. In matters of such serious moment, such a ground for error ought to be sedulously avoided. On the style and latinity of this work it is not very necessary to comment. Let it suffice to

say, "cum flueret lutulentus erat quod tollere velles." It runs through the several degrees of carelessness, elegance, and over-elaborateness (if we be allowed the use of the expression). We perceive by a note on the last page, that it is in contemplation to bring out, in a short time, a new edition. We trust the authors will then give a finishing hand to the improvements they have already made, and which have contributed, not only to their own reputation, but to the general advantage of the profession.

The Codex will be found a most valuable acquisition to the library of every medical man. It is, in truth, better adapted to that place than to the shop of the apothecary.

# ANALECTA.

## 1. *A New Membrane in the Eye.*

Professor Francesco Mondini, of Bologna, has lately reproduced and endeavoured to confirm an observation published by his father Dr. Carlo Mondini, in 1791, regarding what is called the pigmentum nigrum. Other anatomists have considered that substance to be an inorganic paste, by which the internal surface of the choroid and the posterior surface of the iris are besmeared. Professor Mondini, on the other hand, supported both by the investigations of his father, and by repeated observations made by himself, believes that he has demonstrated the pigmentum nigrum to be a true membrane, extended over the whole internal part of the eye, between the retina and the choroid, and forming, independently of the choroid, a universal involucrum, denser at the ciliary processes and on the iris, and always more delicate as it approaches towards the optic nerve. He has shewn also that the same membrane exists in the eyes of the inferior animals, and has described the various structures which it presents in different genera. Professor Mondini has given the name of *globular* to this membrane, from its being composed of little globules not perfectly round, but more or less polygonal, connected together by cellular substance of various density not only in different animals, but even in the different parts of the same eye. This membrane is enabled by its organization to secrete and deposit a black substance, which, according to Professor Mondini, who has had it chemically analyzed, is ferruginous, that is to say, a black oxide of iron.

## 2. *Petechial Fever in Rome, in* 1817.

Dr. Giacomo Folchi has published a Memoir on the Petechial Fever which prevailed in Rome, to the end of September, 1817. The contagion began to advance slowly in the hospitals and private houses of Rome, in February and March. In some individuals the petechiæ did not spare the countenance, particularly the upper eyelid. During the winter and spring, the disease was often complicated with inflammation of the lungs, which in many dead bodies were found hepatized, and covered with pseudo-membranes. Towards the end of June, this complication began to diminish, when the disease became less severe and more easy to overcome. The resolution of the disease took place, sometimes by expectoration, sometimes by perspiration or diarrhœa, and in certain cases, by all these evacuations. There was no regularity nor constancy in the critical days, but the disease continued more or less imminent during indeterminate spaces of time. Some patients were covered with papulæ similar to measles, which are considered by the author as a variety of petechiæ. The fever, in the first three or four days, had very long and almost apyrexial remissions, often with perspiration; as it advanced it became continued, with some remission in the morning, and exacerbation in the evening. Tension and distressing fulness of the stomach, with vomiting and diarrhœa, were frequent symptoms. Epistaxis took place in some, and with relief, especially to the head-ach. A usual occurrence about the middle of the disease was deafness, which slowly departed towards the end of convalescence. For the most part, the fever completed its course in fifteen or sixteen days; sometimes it was prolonged to twenty-one days. Dr. Folchi attributes the epidemic diffusion of the contagion to the extraordinarily mild temperature of the atmosphere during the winter of 1817—a mildness which he supposes to have kept

open the pores of the body, and thus favoured the absorption of the miasma. The miserable food of the common people gave rise to the gastric complication. He found bloodletting useful when practised in the beginning of the disease, and in young strong subjects, having severe headach, or sopor, with flushed face, tense pulse, rapid respiration, dry skin, and delirium. In less severe cases, and in languid individuals, bloodletting was abstained from, although a slightly counter-imulating method of treatment, to use a phrase at present much in vogue in the Italian schools, was still employed. This consisted in cremor tartaris with sugar mixed with a large quantity of water, and drinks acidulated with lemon-juice, employed simply or rendered more active by means of a few grains of tartar emetic. Vesicatories were very rarely applied, and only in advanced cases to favour expectoration. Glysters given daily, and frictions over the abdomen with a volatile liniment, were found useful in combating the affection of the digestive organs. Dr. Folchi ends his work by some cases of the petechial fever. One of them is particularly interesting; being that of a stout young man, in whom the angina symptomatic of the exanthema, which in him had the appearance of scarlatina and miliary eruption, degenerated into a fatal gangrene of the tonsils.

### 3. *Incision of a Stricture of the Urethra.*

A man, aged 77 years, was admitted into the Clinical Institution at Halle, with stricture of the urethra. From long delay before he applied for assistance, inflammation of the bladder had already taken place. The patient would not listen to any proposal of puncturing the bladder, nor indeed of any operation whatever. Professor Dzondi had a strong silver catheter suddenly prepared, so that about a line's length of the shut end of the instrument was cut away, and into the opening, a lancet-shaped knife inserted, which by a simple mechanism could be drawn back and pushed forwards on applying the finger to the extremity of the straight part of the catheter. As the patient supposed this to be a common catheter, he allowed it to be brought into the urethra. As soon as Professor Dzondi had brought its extremity firmly into contact with the stricture, which was near the neck of the bladder, he pushed the knife forcibly onwards, and immediately conducted the catheter into the bladder. The urine trickled through the instrument, and on withdrawing this, was freely discharged. But the assistance came too late. The old man died on the second day after. On dissection, considerable inflammation and commencing suppuration of the bladder were observed. The neighbouring parts of the abdomen also were inflamed. *Kurze Geschichte des Institutes für Chirurgie und Augenheilkunde zu Halle*, 1818.

### 4. *Amaurosis from Suppressed Purulent Discharge.*

A waggoner, aged 45 years, undertook a journey in wet and cold weather. The discharge from ulcers of his legs, which had for many years continued open, was suppressed, and he became blind. Fourteen days after, he was brought to the hospital. He saw nothing, not even a brightly lighted window. The pupil was oblong and extremely dilated. Beer immediately pronounced the most favourable prognosis, especially as there were present internal sensations of light in the eye, without varicosity and without change in the humours. He had cured more than twenty such amaurotic patients, by restoring the purulent discharge. The prescriptions were:—Sinapisms of the size of the hand to the ulcers of both legs, pediluvia with mustard, and internally: R. Sulph. aur. Ant. gr. i. Camph. gr. ij. Flor. Sulph. vi. Sacch. gr. x. M. Three powders daily. The sinapisms were renewed daily, and on the tenth day vision began to return. The sinapisms acted severely on the ulcers, which became deep cavities with dark-coloured edges. In thirty days vision was almost completely restored. *Osiander's Nachrichten von Wien. Tübingen*, 1817.

### 5. *Artificial Pupil in the Sclerotica.*

It very frequently happens from inflammation, that the cornea becomes permanently opake in its whole extent, while the internal parts of the eye still continue healthy, and the retina sensible. These cases have, till lately, been considered as altogether hopeless. Professor Autenrieth, of Tubingen, appears to have been the first to propose the formation of an artificial pupil in such cases, through the sclerotica. A small triangular piece of the sclerotica is to be removed close to the edge of the cornea, and then the portion of choroidea thus brought into view, is to be removed with the scissors. A thin and semipellucid membrane forms, and closes the aperture or pupil thus made, so that light sufficient for many useful purposes is admitted into the eye. In the hands of Professor Autenrieth this operation has perfectly succeeded on dogs. It has been tried in one case on the human subject, but without success. The operation has been made the subject of the following Thesis at Tubingen:—Dissertatio de pupilla Artificiali in Sclerotica aperienda: Auctore L. Schmidt, praes. Autenrieth.

### 6. *Difficult Labour accomplished by Incision of the Anterior Lip of the Os Uteri, and of the Perinæum.*

A woman, aged 19 years, was admitted into the Obstetrical Clinic at Pavia, on the 27th of October last. Some weeks before that period, she had had a severe inflammation of the external genital organs, extending even to the neck of the uterus, caused by a long and fatiguing journey. She neglected this inflammation, and the parts passed into a state of induration and ulceration. The external labia and the nymphæ were tumid, hard, and ulcerated; and swelling and induration extended to the inferior commissure of the vulva, to all the posterior part of the vagina, and to the os uteri, which formed a thick, hard, and, to the touch, almost schirrous ring. On the 21st of November, the first symptoms manifested themselves of parturition, which, from the circumstances already mentioned, promised to be difficult. On the 22d, before the least dilatation of the os uteri had taken place, the membranes gave way, and the waters were discharged. Temporizing with the case, in the hope that under the uterine contractions its orifice would gradually yield, such means were employed as have appeared useful in similar circumstances; venesection to eight ounces was practised on the morning of the 23d, the patient was immersed in a tepid semicupium, repeated oily injections were made into the vagina, but with scarcely any advantage. The inutility of these means, and the vain endeavours of the patient to overcome an obstacle of such a nature, led to thoughts of the following operation.

At three o'clock in the afternoon of the 24th, the patient being placed on the edge of the delivery-bed, and in a fit position, the index-finger of the left hand was introduced into the vagina, and its point insinuated between the anterior lip of the os uteri and the head of the fœtus. Professor Cairoli then conducted along the finger thus introduced a pair of blunt-pointed scissors, and with this instrument divided the hard and resisting edge of the os uteri. Scarcely had this incision been made, when the lips of the wound suddenly separated, and so considerable a dilatation of the orifice took place, that the head soon overcame its state of *incoronamento*, and descended so far through the pelvis, that nothing further prevented its total exit, than the induration of the inferior commissure of the vulva. No relaxation of this part had taken place from the fomentations and inunctions which had been employed. The pains were strongly increased; the perinæum, thrust outward and compressed by the head, was tense, prominent, and threatened a sudden rupture. Wishing to avoid such an accident, Professor Cairoli passed a grooved director between the head and the perinæum, and ran along the groove a convex-edged bistoury, by which he made an incision through the middle of the perinæum. The labour was now quickly accomplished. If the patient had had

to overcome the consequences of the operation merely, there is every reason to think that she would have recovered. Gangrene of the uterus, however, took place, from the severe effects, upon its internal surface, of the exertions made to expel the fœtus, and the woman died.

### 7. *Extract from the Bills of Mortality of the twelve Municipalities of Paris*, 1818.

| | |
|---|---|
| The number of deaths in 1818, was.......................... | 21,821 |
| In 1817, it was.......................................... | 21,382 |
| Increase in 1818,.................. | 439 |

Of these, 14,478 occurred in dwelling-houses, and 7,343 in the hospitals. Of the former, 7,183 were men, 7,295 females; of the latter, 3,633 were men; 3,710 women.

682 died of the small pox in 1818, being an increase of 196 since 1817, when only 486 died of this malady.

In the deaths are comprised 257 bodies deposited at the Morgue—i. e. 202 males, 55 females. The cases of suicide are not stated; the number appeared too frightful. It has been increasing for several years.

The principal causes of death have been as follows:—

| | *Men.* | *Women.* | *Total.* |
|---|---|---|---|
| Fevers, putrid or adynamic,.................. | 400 | 443 | 843 |
| ——— malignant or ataxic,...................... | 391 | 424 | 715 |
| ——— undetermined,.......................... | 171 | 319 | 490 |
| Phlegmasiæ, cutaneous........................ | 746 | 649 | 1395 |
| ——— of mucous membranes,................. | 1237 | 1453 | 2690 |
| ——— serous do............................ | 202 | 281 | 483 |
| ——— cellular texture and parenchymatous organs,.................................. | 1454 | 1858 | 3312 |
| Comatose affections.......................... | 496 | 503 | 999 |
| Spasmodic do................................ | 787 | 732 | 1519 |
| Local Nervous do............................ | 501 | 512 | 1013 |
| General organic lesions...................... | 1895 | 2063 | 3958 |
| Particular do............................... | 802 | 900 | 1702 |
| Gangrenous inflammations..................... | 80 | 101 | 181 |
| Died in childbed............................ | — | 75 | 75 |

RECAPITULATION.

| | *Men.* | *Women.* | *Total.* |
|---|---|---|---|
| From birth to 3 months....................... | 2202 | 1752 | 3944 |
| 3 to 6 months............................... | 200 | 220 | 420 |
| 6 months to 1 year.......................... | 380 | 382 | 762 |
| 1 to 2 years................................ | 652 | 679 | 1331 |
| 2 .. 3 ..................................... | 489 | 437 | 926 |
| 3 .. 4 ..................................... | 237 | 271 | 502 |
| 4 .. 5 ..................................... | 179 | 177 | 356 |
| 5 .. 6 ..................................... | 137 | 129 | 376 |
| 6 .. 7 ..................................... | 126 | 122 | 248 |
| 7 .. 8 ..................................... | 79 | 74 | 153 |
| 8 .. 9 ..................................... | 61 | 72 | 139 |
| 9 .. 10 .................................... | 154 | 64 | 218 |
| 10 .. 15 ................................... | 221 | 224 | 445 |

| | *Men.* | *Women.* | *Total.* |
|---|---|---|---|
| From 15 to 20 years | 403 | 409 | 812 |
| 20 .. 25 | 451 | 462 | 913 |
| 25 .. 30 | 280 | 465 | 745 |
| 30 .. 35 | 315 | 447 | 762 |
| 35 .. 40 | 381 | 437 | 818 |
| 40 .. 45 | 303 | 449 | 752 |
| 45 .. 50 | 341 | 475 | 816 |
| 50 .. 55 | 406 | 421 | 827 |
| 55 .. 60 | 585 | 474 | 1059 |
| 60 .. 65 | 586 | 603 | 1189 |
| 65 .. 70 | 480 | 612 | 1092 |
| 70 .. 75 | 523 | 590 | 1113 |
| 75 .. 80 | 369 | 544 | 913 |
| 80 .. 85 | 245 | 322 | 567 |
| 85 .. 90 | 87 | 127 | 214 |
| 90 .. 95 | 19 | 40 | 59 |
| 95 . 100 | 2 | 5 | 7 |

It is remarked, that in these Tables the mortality of women is not greater at the critical period of life than at any other, and that it increases at an advanced age.

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